GEL Laboratories LLC
a member of The GEL Group INC

PO Box 30712 Charleston, SC 29417
2040 Savage Road Charleston, SC 29407
P 843.556.8171
F 843.766.1178

gel.com

May 24, 2016

Mr. Scot Fitzgerald
CH2MHill Plateau Remediation Company
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352

Re: CHPRC SAF I16-023
Work Order: 396189
SDG: GEL396189

Dear Mr. Fitzgerald:

GEL Laboratories, LLC (GEL) appreciates the opportunity to provide the enclosed analytical results for the sample(s) we received on April 28, 2016. This original data report has been prepared and reviewed in accordance with GEL's standard operating procedures.

Our policy is to provide high quality, personalized analytical services to enable you to meet your analytical needs on time every time. We trust that you will find everything in order and to your satisfaction. If you have any questions, please do not hesitate to call me at (843) 556-8171, ext. 4505.

Sincerely,

B Luthman
Brielle Luthman for
Heather Shaffer
Project Manager

Purchase Order: 300071JDBA 7H
Chain of Custody: I16-023-112, I16-023-113, I16-023-114 and I16-023-118
Enclosures

Table of Contents

Case Narrative

General Narrative
for
CH2MHill Plateau Remediation Company
CHPRC SAF I16-023
SDG: GEL396189

May 24, 2016

Laboratory Identification:

GEL Laboratories LLC
2040 Savage Road
Charleston, South Carolina 29407
(843) 556-8171

Summary

Sample receipt

The sample(s) arrived at GEL Laboratories, LLC, Charleston, South Carolina on April 28, 2016, for analysis. The samples were delivered with proper chain of custody documentation and signatures. All sample containers arrived without any visible signs of tampering or breakage. There are no additional comments concerning sample receipt.

Items of Note All efforts were made by the lab to meet any short hold times. Samples that were analyzed outside of the initial hold time but still within 2X hold time will be noted in the lab case narrative and DER.

Sample Identification
The laboratory received the following samples:

Laboratory Identification	Sample Description
396189001	B34YD0
396189002	B34YD5
396189003	B34YD1
396189004	B34YJ7
396189005	B34YK0
396189006	B34YD4
396189007	B34YC9

Case Narrative

Sample analyses were conducted using methodology as outlined in GEL Laboratories, LLC (GEL) Standard Operating Procedures. Any technical or administrative problems during analysis, data review, and reduction are contained in the analytical case narratives in the enclosed data package.

Data Package

The enclosed data package contains the following sections: General Narrative, Chain of Custody and Supporting Documentation, and data from the following fractions: GC/MS Volatile, General Chemistry, Metals and Radiochemistry.

We certify that this package is in compliance with the SOW, both technically and for completeness, including a full description of, explanation of, and corrective actions for, any and all deviations, from either the analyses requested or the case narrative requested. Release of the data contained in this hard copy data package has been authorized by the Laboratory Analytical Manager (or designee) and the laboratory's client services representative as verified by their signatures on this report.

B Luthman

Brielle Luthman for
Heather Shaffer
Project Manager

Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL396189
Work Order #: 396189

GC/MS Volatile

Volatile Organic Compounds (VOC) by Gas Chromatograph/Mass Spectrometer

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Quality Control (QC) Information

Matrix Spike/Matrix Spike Duplicate Recovery Statement
The spike and/or spike duplicate (See Below) recoveries were not all within the acceptance limits. The recoveries were similar. It is believed possible matrix interference has been demonstrated.

Sample	Analyte	Value
1203538672 (Non SDG 396094001PS)	Acetone	61* (70%-130%)
1203538673 (Non SDG 396094001PSD)	Acetone	57* (70%-130%)

Metals

Determination of Metals by ICP

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Determination of Metals by ICP-MS

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Quality Control (QC) Information

Method Blank (MB) Statement
The method blanks (MB) analyzed with this SDG met the exception criteria with the exception of thorium. In instances where there were positive hits in the method blank, the results were evaluated and appropriately flagged on the data. 1203538174 (MB).

General Chemistry

Ion Chromatography

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Technical Information

Sample Dilutions
The following samples 1203537650 (B34YD1DUP), 1203537651 (B34YD1PS) and 396189003 (B34YD1) were diluted because target analyte concentrations exceeded the calibration range.

Analyte	396189 003
Chloride	10X
Sulfate	10X

Miscellaneous Information

Manual Integrations
Samples 1203537650 (B34YD1DUP), 1203537651 (B34YD1PS) and 396189003 (B34YD1) were manually integrated to correctly position the baseline as set in the calibration standards.

Hexavalent Chromium

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Alkalinity

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Radiochemistry

9310_ALPHABETA_GPC: COMMON

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Quality Control (QC) Information

QC Information
The matrix spike and matrix spike duplicate, 1203542217 (Non SDG 396596001MS) and 1203542218 (Non SDG 396596001MSD), did not meet the client's alpha relative percent difference/relative error ratio requirement; however, they do meet the recovery requirement. The sample and the duplicate, 1203542216 (Non SDG 396596001DUP), did not meet the alpha relative percent difference requirement; however, they do meet the relative error ratio requirement with a value of 1.94.

Technical Information

Gross Alpha/Beta Preparation Information
High hygroscopic salt content in evaporated samples can cause the sample mass to fluctuate due to moisture absorption. To minimize this interference, the salts are converted to oxides by heating the sample under a flame until a dull red color is obtained. The conversion to oxides stabilizes the sample weight and ensures that proper alpha/beta efficiencies are assigned for each sample. Volatile radioisotopes of carbon, hydrogen, technetium, polonium and cesium may be lost during sample heating.

Recounts
Samples 1203542217 (Non SDG 396596001MS), 1203542218 (Non SDG 396596001MSD) and 1203542219 (LCS) were recounted due to high recovery. The recounts are reported.

Miscellaneous Information

Additional Comments
The matrix spike and matrix spike duplicate, 1203542217 (Non SDG 396596001MS) and 1203542218 (Non SDG 396596001MSD), aliquots were reduced to conserve sample volume.

TC99_EIE_LSC: COMMON

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Technical Information

Recounts
Sample 396189007 (B34YC9) was recounted to verify sample results. The recount results are similar to the original results. Original results are reported.

C14_LSC: COMMON

All sample data provided in this report met the acceptance criteria specified in the analytical methods and

procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Quality Control (QC) Information

QC Information
The sample and the duplicate, 1203543071 (B34Y25DUP), did not meet the relative percent difference requirement; however, they do meet the relative error ratio requirement with a value of 1.83.

Technical Information

Recounts
Samples 1203543071 (B34Y25DUP) and 396189007 (B34YC9) were recounted to verify sample results. The recount results are similar to the original results. Original results are reported.

TRITIUM_DIST_LSC: COMMON

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Technical Information

Recounts
Sample 1203544165 (B34Y25MS) was recounted due to low recovery. The recount is reported. Sample 1203544163 (MB) was recounted due to high MDC. The recount is reported. Sample 396189007 (B34YC9) was recounted to verify sample results. Recount is reported.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

SAMPLE ISSUE RESOLUTION

SIR NUM	SIR16-340
REV NUM	0
DATE INITIATED	5/4/2016

SAMPLE EVENT INFORMATION

SAF NUM(S)	I16-023
OPERABLE UNIT(S)	
PROJECT(S)	CERC16
SAMPLE EVENT TITLE(S)	CERC16
LABORATORY	GEL Laboratories, LLC

SAMPLING INFORMATION

NUMBER OF SAMPLES	6
SAMPLE NUMBERS	B34YC9, B34YD0, B34YD4, B34YD5, B34YJ7, B34YK0
SAMPLE MATRIX	WATER
COLLECTION DATE	4/27/2016 - 4/27/2016
SDG NUM	GEL396189

ISSUE BACKGROUND

CLASS	Laboratory Issue
TYPE	Chain of Custody Issue
DESCRIPTION	COC #I16-023-113, SAMPLE B34YD0 & B34YD5 COC #I16-023-112, SAMPLE B34YD4 & B34YC9 COC #I16-023-118, SAMPLE B34YJ7 & B34YK0 INCORRECT FINAL RECEIVED BY DATE

DISPOSITION

DESCRIPTION	DOCUMENT AND CLOSE
JUSTIFICATION	DOCUMENT AND CLOSE
	SUBMITTED BY: Gayelyn Gibson DATE: 04/28/2016 ACCEPTED BY: Kirsten Killand DATE: 05/04/2016

Chain of Custody and Supporting Documentation

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 396189	C.O.C. # I16-023-113 Page 1 of 1

Collector	J.R. Aguilar/CHPRC	**Contact/Requester**	Karen Waters-Husted	**Telephone No.**	509-376-4650
SAF No.	I16-023	**Sampling Origin**	Hanford Site	**Purchase Order/Charge Code**	300071
Project Title	100KR4, MAY 2016	**Logbook No.**	HNF-N-506 85 / 46	**Ice Chest No.**	GWS-288 JJF 04/27/16
Shipped To (Lab)	GEL Laboratories, LLC	**Method of Shipment**	Commercial Carrier	**Bill of Lading/Air Bill No.**	776208841400
Protocol	CERCLA	**Priority:**	30 Days PRIORITY	**Offsite Property No.**	6503

POSSIBLE SAMPLE HAZARDS/REMARKS

** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1

SPECIAL INSTRUCTIONS **Hold Time** Total Activity Exemption: Yes ☑ No ☐

N/A
Special Handling:N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B34YD0	N	W	4-27-16	0852	1x500-mL aG	7196_CR6: COMMON	24 Hours	Cool <=6C
B34YD5	Y	W	4-27-16	0852	1x500-mL aG	7196_CR6: COMMON	24 Hours	Cool <=6C

Relinquished By	Print	Sign	Date/Time	Received By	Print	Sign	Date/Time
	J.R. Aguilar/CHPRC		APR 2 7 2016 1020		Troy Bacon CHPRC	Troy L. Bacon	APR 2 7 2016 1020
Relinquished By	Troy Bacon CHPRC	Troy L. Bacon	APR 2 7 2016 1400	Received By	FEDEX		Date/Time
Relinquished By			Date/Time	Received By	M. Kinslow		4/28/16 0900 Date/Time
Relinquished By			Date/Time	Received By			Date/Time

Matrix *

S	= Soil	DS	=	Drum Solids	
SE	= Sediment	DL	=	Drum Liquids	
SO	= Solid	T	=	Tissue	
SL	= Sludge	WI	=	Wipe	
W	= Water	L	=	Liquid	
O	= Oil	V	=	Vegetation	
A	= Air	X	=	Other	

FINAL SAMPLE DISPOSITION	Disposal Method (e.g., Return to customer, per lab procedure, used in process)	Disposed By	Date/Time

PRINTED ON 3/21/2016 FSR ID = FSR28073 A-6004-842 (REV 2)

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 396189	C.O.C. # I16-023-114 Page 1 of 1

Collector	J.R. Aguilar/CHPRC	**Contact/Requester**	Karen Waters-Husted	**Telephone No.**	509-376-4650
SAF No.	I16-023	**Sampling Origin**	Hanford Site	**Purchase Order/Charge Code**	300071
Project Title	100KR4, MAY 2016	**Logbook No.**	HNF-N-506 85/46	**Ice Chest No.**	GWS-288
Shipped To (Lab)	GEL Laboratories, LLC	**Method of Shipment**	Commercial Carrier	**Bill of Lading/Air Bill No.**	776208842400
Protocol	CERCLA	**Priority:**	30 Days **PRIORITY**	**Offsite Property No.**	6563

POSSIBLE SAMPLE HAZARDS/REMARKS

** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1

SPECIAL INSTRUCTIONS **Hold Time** Total Activity Exemption: Yes ☑ No ☐

N/A
Special Handling:N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B34YD1	N	W	4-27-16	0852	1x250-mL G/P	9056_ANIONS_IC: COMMON	48 Hours	Cool <=6C

Relinquished By	Print / Sign	Date/Time	Received By	Print / Sign	Date/Time
J.R. Aguilar/CHPRC		APR 27 2016 1020	Troy Bacon CHPRC	Troy L. Bacon	APR 27 2016 1020
Troy Bacon CHPRC	Troy L. Bacon	APR 27 2016 1400	FEDEX		
			M. Kinslow		4-28-16 0900

Matrix *

S	= Soil	DS	= Drum Solids		
SE	= Sediment	DL	= Drum Liquids		
SO	= Solid	T	= Tissue		
SL	= Sludge	WI	= Wipe		
W	= Water	L	= Liquid		
O	= Oil	V	= Vegetation		
A	= Air	X	= Other		

FINAL SAMPLE DISPOSITION Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

PRINTED ON 3/21/2016 **FSR ID = FSR28073** A-6004-842 (REV 2)

CH2MHill Plateau Remediation Company

CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST

396189

C.O.C. # **I16-023-112**

Page 1 of 1

Collector	J.R. Aguilar/CHPRC	**Contact/Requester**	Karen Waters-Husted	**Telephone No.**	509-376-4650
SAF No.	I16-023	**Sampling Origin**	Hanford Site	**Purchase Order/Charge Code**	300071
Project Title	100KR4, MAY 2016	**Logbook No.**	HNF-N-506 85 146	**Ice Chest No.**	GWS-288
Shipped To (Lab)	GEL Laboratories, LLC	**Method of Shipment**	Commercial Carrier	**Bill of Lading/Air Bill No.**	776208421400
Protocol	CERCLA	**Priority:**	30 Days **PRIORITY**	**Offsite Property No.**	6563

POSSIBLE SAMPLE HAZARDS/REMARKS

** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1

SPECIAL INSTRUCTIONS **Hold Time** Total Activity Exemption: Yes ☑ No ☐

N/A
Special Handling:N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B34YD4	Y	W	4-27-16	0852	1x500-mL G/P	6020_METALS_ICPMS: GW 01; 6010_METALS_ICP: GW 04	6 Months	HNO3 to pH <2
B34YC9	N	W			1x250-mL G/P	2320_ALKALINITY: GW 01	14 Days	Cool <=6C
B34YC9	N	W			1x500-mL G/P	6020_METALS_ICPMS: GW 01; 6010_METALS_ICP: GW 04	6 Months	HNO3 to pH <2
B34YC9	N	W			4x40-mL aGs*	8260_VOA_GCMS: COMMON; 8260_VOA_GCMS: GW 01	14 Days	HCl or H2SO4 to pH <2/Cool <=6C
B34YC9	N	W			2x1-L P	9310_ALPHABETA_GPC: COMMON	6 Months	HNO3 to pH <2
B34YC9	N	W			1x500-mL G/P	C14_LSC: COMMON	6 Months	None
B34YC9	N	W			1x500-mL G/P	TC99_EIE_LSC: COMMON	6 Months	HNO3 to pH <2
B34YC9	N	W	4-27-16	0852	1x500-mL P	TRITIUM_DIST_LSC: COMMON	6 Months	None

	Print	Sign	Date/Time
Relinquished By	J.R. Aguilar/CHPRC		APR 27 2016 1020
Relinquished By	Troy Bacon CHPRC	Troy L. Bacon	APR 27 2016 1400
Relinquished By		fedex	Date/Time
Relinquished By			Date/Time
Received By	Troy Bacon CHPRC	Troy L. Bacon	APR 27 2016 1020
Received By		FEDEX	Date/Time
Received By	M. Kinslow		4/28/16 0900
Received By			Date/Time

Matrix *

S = Soil	DS = Drum Solids		
SE = Sediment	DL = Drum Liquids		
SO = Solid	T = Tissue		
SL = Sludge	WI = Wipe		
W = Water	L = Liquid		
O = Oil	V = Vegetation		
A = Air	X = Other		

FINAL SAMPLE DISPOSITION Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

4/29/16 RS

PRINTED ON 3/21/2016 FSR ID = FSR28073 A-6004-842 (REV 2)

76 LBS

CH2MHill Plateau Remediation Company	CHAIN OF CUSTODY/SAMPLE ANALYSIS REQUEST 3961189	C.O.C. # I16-023-118 Page 1 of 1

Collector	J.R. Aguilar/CHPRC	**Contact/Requester**	Karen Waters-Husted	**Telephone No.**	509-376-4650
SAF No.	I16-023	**Sampling Origin**	Hanford Site	**Purchase Order/Charge Code**	300071
Project Title	100KR4, MAY 2016	**Logbook No.**	HNF-N-506 85 / 46	**Ice Chest No.**	GWS - 288
Shipped To (Lab)	GEL Laboratories, LLC	**Method of Shipment**	Commercial Carrier	**Bill of Lading/Air Bill No.**	776208421400
Protocol	CERCLA	**Priority:**	30 Days PRIORITY	**Offsite Property No.**	6563

POSSIBLE SAMPLE HAZARDS/REMARKS

** ** Contains Radioactive Material at concentrations that are not regulated for transportation per 49 CFR / IATA Dangerous Goods Regulations but are not releasable per DOE Order 458.1

SPECIAL INSTRUCTIONS **Hold Time** Total Activity Exemption: Yes ☑ No ☐

N/A
Special Handling:N/A

Sample No.	Filter	*	Date	Time	No/Type Container	Sample Analysis	Holding Time	Preservative
B34YJ7	N	W	4-27-16	0930	1x500-mL G/P	6010_METALS_ICP: COMMON; 6010_METALS_ICP: GW 03	6 Months	HNO3 to pH <2
B34YJ7	N	W	4-27-16	0930	4x40-mL aGs*	8260_VOA_GCMS: COMMON; 8260_VOA_GCMS: GW 01	14 Days	HCl or H2SO4 to pH <2/Cool <=6C
B34YK0	Y	W	4-27-16	0930	1x500-mL G/P	6010_METALS_ICP: COMMON; 6010_METALS_ICP: GW 03	6 Months	HNO3 to pH <2

Relinquished By (Print / Sign)	Date/Time	Received By (Print / Sign)	Date/Time
J.R. Aguilar/CHPRC	APR 2 7 2016 1020	Troy Bacon CHPRC Troy L. Bacon	APR 2 7 2016 1020
Troy Bacon CHPRC Troy L. Bacon	APR 2 7 2016 1400	FEDEX	
FedEx		M. Erickson	0900 4/29/16
			28 4/29/16

Matrix *

S = Soil	DS = Drum Solids		
SE = Sediment	DL = Drum Liquids		
SO = Solid	T = Tissue		
SL = Sludge	WI = Wipe		
W = Water	L = Liquid		
O = Oil	V = Vegetation		
A = Air	X = Other		

FINAL SAMPLE DISPOSITION Disposal Method (e.g., Return to customer, per lab procedure, used in process) Disposed By Date/Time

PRINTED ON 3/21/2016 **FSR ID = FSR28078** A-6004-842 (REV 2)

GEL Laboratories LLC

SAMPLE RECEIPT & REVIEW FORM

Client: CPRG		**SDG/AR/COC/Work Order:** 396189	
Received By: MK		**Date Received:** 4-28-16	
Suspected Hazard Information	Yes	No	*If Net Counts > 100cpm on samples not marked "radioactive", contact the Radiation Safety Group for further investigation.
COC/Samples marked as radioactive?		✓	Maximum Net Counts Observed* (Observed Counts - Area Background Counts): Cpm 0
Classified Radioactive II or III by RSO?		✓	If yes, Were swipes taken of sample containers < action levels?
COC/Samples marked containing PCBs?		✓	
Package, COC, and/or Samples marked as beryllium or asbestos containing?		✓	If yes, samples are to be segregated as Safety Controlled Samples, and opened by the GEL Safety Group.
Shipped as a DOT Hazardous?		✓	Hazard Class Shipped: UN#:
Samples identified as Foreign Soil?		✓	

	Sample Receipt Criteria	Yes	NA	No	Comments/Qualifiers (Required for Non-Conforming Items)
1	Shipping containers received intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
2	Samples requiring cold preservation within (0 ≤ 6 deg. C)?*	✓			Preservation Method: Ice bags Blue ice Dry ice None Other (describe) *all temperatures are recorded in Celsius 2c
2a	Daily check performed and passed on IR temperature gun?	✓			Temperature Device Serial #: 130462962 Secondary Temperature Device Serial # (If Applicable):
3	Chain of custody documents included with shipment?	✓			
4	Sample containers intact and sealed?	✓			Circle Applicable: Seals broken Damaged container Leaking container Other (describe)
5	Samples requiring chemical preservation at proper pH?	✓			Sample ID's, containers affected and observed pH: If Preservation added, Lot#:
6	Do Low Level Perchlorate samples have headspace as required?		✓		Sample ID's and containers affected:
7	VOA vials contain acid preservation?	✓			(If unknown, select No)
8	VOA vials free of headspace (defined as < 6mm bubble)?	✓			Sample ID's and containers affected:
9	Are Encore containers present?			✓	(If yes, immediately deliver to Volatiles laboratory)
10	Samples received within holding time?	✓			ID's and tests affected:
11	Sample ID's on COC match ID's on bottles?	✓			Sample ID's and containers affected:
12	Date & time on COC match date & time on bottles?	✓			Sample ID's affected:
13	Number of containers received match number indicated on COC?	✓			Sample ID's affected:
14	Are sample containers identifiable as GEL provided?			✓	
15	COC form is properly signed in relinquished/received sections?	✓			
16	Carrier and tracking number.				Circle Applicable: FedEx Air FedEx Ground UPS Field Services Courier Other 7762 0842 1400

Comments (Use Continuation Form if needed):

PM (or PMA) review: Initials DD Date 4/28/16 Page 1 of 1

GL-CHL-SR-001 Rev 3

Data Review Qualifier Definitions

GEL LABORATORIES LLC
2040 Savage Road Charleston, SC 29407 (843) 556−8171

Report Date: 24−MAY−16

Project Specific Qualifier Definitions for GEL Client Code: CPRC

Qualifier	Qualifier Definition	Department	Fraction
U	Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.		
J	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).Value is estimated	Organics	
P	Aroclor target analyte with greater than 25% difference between column analyses.	Organics	
C	Analyte has been confirmed by GC/MS analysis	Organics	Pesticide
B	The analyte was detected in both the associated QC blank and in the sample.	Organics	
E	Concentration exceeds the calibration range of the instrument	Organics	
A	The TIC is a suspected aldol−condensation product	Organics	Semi−Volatile
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier		
N	Spike Sample recovery is outside control limits.		
*	Duplicate analysis not within control limits	Inorganics	
>	Result greater than quantifiable range or greater than upper limit of the analysis range	General Chemistry	
Z	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier		
B	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).	Inorganics	Metals
D	Results are reported from a diluted aliquot of sample.		
E	Reported value is estimated due to interferences. See comment in narrative.	Inorganics	Metals
M	Duplicate precision not met.	Inorganics	Metals
o	Analyte failed to recover within LCS limits (0rganics only)	Organics	
S	Reported value determined by the Method of Standard Additions (MSA)	Inorganics	
T	Spike and/or spike duplicate sample recovery is outside control limits.	Organics	
W	Post−digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.	Inorganics	
B	The associated QC sample blank has a result >= 2X the MDA and, after corrections, result is >= MDA for this sample	Radiological	
Y	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier		
+	Correlation coefficient for Method of Standard Additions (MSA) is < 0.995	Inorganics	
B	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).	General Chemistry	
C	Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured concentration and/or decision level for associated samples.	Inorganics	Metals
C	Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured concentration and/or decision level for associated samples.	General Chemistry	
<	Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide	General Chemistry	
UX	Gamma Spectroscopy−−Uncertain identification	Radiological	

Laboratory Certifications

List of current GEL Certifications as of 24 May 2016

State	Certification
Alaska	UST−0110
Arkansas	88−0651
CLIA	42D0904046
California	2940
Colorado	SC00012
Connecticut	PH−0169
Delaware	SC00012
DoD ELAP/ ISO17025 A2LA	2567.01
Florida NELAP	E87156
Foreign Soils Permit	P330−15−00283, P330−15−00253
Georgia	SC00012
Georgia SDWA	967
Hawaii	SC00012
Idaho Chemistry	SC00012
Idaho Radiochemistry	SC00012
Illinois NELAP	200029
Indiana	C−SC−01
Kansas NELAP	E−10332
Kentucky SDWA	90129
Kentucky Wastewater	90129
Louisiana NELAP	03046 (AI33904)
Louisiana SDWA	LA160006
Maryland	270
Massachusetts	M−SC012
Michigan	9976
Mississippi	SC00012
Nebraska	NE−OS−26−13
Nevada	SC000122016−1
New Hampshire NELAP	205415
New Jersey NELAP	SC002
New Mexico	SC00012
New York NELAP	11501
North Carolina	233
North Carolina SDWA	45709
North Dakota	R−158
Oklahoma	9904
Pennsylvania NELAP	68−00485
S.Carolina Radchem	10120002
South Carolina Chemistry	10120001
Tennessee	TN 02934
Texas NELAP	T104704235−16−11
Utah NELAP	SC000122016−20
Vermont	VT87156
Virginia NELAP	460202
Washington	C780
West Virginia	997404

Volatile Analysis

Case Narrative

GC/MS Volatile
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL396189
Work Order #: 396189

Product: **Volatile Organic Compounds (VOC) by Gas Chromatograph/Mass Spectrometer**
Analytical Method: SW846 8260C
Analytical Procedure: GL-OA-E-038 REV# 22
Analytical Batch: 1563557

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
396189004	B34YJ7
396189007	B34YC9
1203538670	Method Blank (MB)
1203538671	Laboratory Control Sample (LCS)
1203538672	396094001(NonSDG) Post Spike (PS)
1203538673	396094001(NonSDG) Post Spike Duplicate (PSD)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Quality Control (QC) Information

Matrix Spike/Matrix Spike Duplicate Recovery Statement
The spike and/or spike duplicate (See Below) recoveries were not all within the acceptance limits. The recoveries were similar. It is believed possible matrix interference has been demonstrated.

Sample	Analyte	Value
1203538672 (Non SDG 396094001PS)	Acetone	61* (70%-130%)
1203538673 (Non SDG 396094001PSD)	Acetone	57* (70%-130%)

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

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Qualifier Definition Report
for

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL396189 GEL Work Order: 396189

The Qualifiers in this report are defined as follows:

J The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).Value is estimated

T Spike and/or spike duplicate sample recovery is outside control limits.

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

DL Indicates that sample is diluted.

RA Indicates that sample is re-analyzed without re-extraction.

RE Indicates that sample is re-extracted.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature: Erin Haubert **Name: Erin Haubert**

Date: 21 MAY 2016 **Title: Data Validator**

Sample Data Summary

GEL Laboratories LLC

Report Date: May 17, 2016

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**GEL396189**	**Date Collected:**	**04/27/2016 09:30**	**Matrix:**	**WATER**
Lab Sample ID:	**396189004**	**Date Received:**	**04/28/2016 09:00**		
		Client:	**CPRC001**	**Project:**	**CPRC0I16023**
Client ID:	**B34YJ7**	**Method:**	**SW846 8260C**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1563557**	**Inst:**	**VOA3.I**	**Dilution:**	**1**
Run Date:	**04/29/2016 11:20**	**Analyst:**	**CDS1**	**Purge Vol:**	**5 mL**
Prep Date:	**04/29/2016 11:20**				
Data File:	**042916V3\3G508.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	RDL
71-55-6	1,1,1-Trichloroethane	U	0.300	ug/L	0.300	2.00	5.00
79-00-5	1,1,2-Trichloroethane	U	0.300	ug/L	0.300	2.00	5.00
107-06-2	1,2-Dichloroethane	U	0.300	ug/L	0.300	2.00	5.00
106-46-7	1,4-Dichlorobenzene	U	0.300	ug/L	0.300	2.00	5.00
71-43-2	Benzene	U	0.300	ug/L	0.300	2.00	5.00
75-15-0	Carbon disulfide	U	1.60	ug/L	1.60	10.0	5.00
56-23-5	Carbon tetrachloride	U	0.300	ug/L	0.300	2.00	5.00
108-90-7	Chlorobenzene	U	0.300	ug/L	0.300	2.00	5.00
67-66-3	Chloroform	J	0.410	ug/L	0.300	2.00	5.00
100-41-4	Ethylbenzene	U	0.300	ug/L	0.300	2.00	5.00
75-09-2	Methylene chloride	U	1.60	ug/L	1.60	5.00	5.00
127-18-4	Tetrachloroethylene	U	0.300	ug/L	0.300	2.00	5.00
108-88-3	Toluene	U	0.300	ug/L	0.300	2.00	5.00
79-01-6	Trichloroethylene	J	4.55	ug/L	0.300	2.00	5.00
156-59-2	cis-1,2-Dichloroethylene	U	0.300	ug/L	0.300	2.00	5.00
156-60-5	trans-1,2-Dichloroethylene	U	0.300	ug/L	0.300	2.00	5.00
75-34-3	1,1-Dichloroethane	U	0.300	ug/L	0.300	2.00	10.0
75-35-4	1,1-Dichloroethylene	U	0.300	ug/L	0.300	2.00	10.0
78-93-3	2-Butanone	U	3.00	ug/L	3.00	10.0	10.0
108-10-1	4-Methyl-2-pentanone	U	3.00	ug/L	3.00	10.0	10.0
107-12-0	Propionitrile	U	3.00	ug/L	3.00	10.0	10.0
75-01-4	Vinyl chloride	U	0.300	ug/L	0.300	2.00	10.0
1330-20-7	Xylenes (total)	U	0.300	ug/L	0.300	6.00	10.0
67-64-1	Acetone	TU	3.00	ug/L	3.00	10.0	20.0
109-99-9	Tetrahydrofuran	U	1.50	ug/L	1.50	10.0	50.0
71-36-3	n-Butyl alcohol	U	83.3	ug/L	83.3	250	100

GEL Laboratories LLC

Report Date: May 17, 2016

Volatile
Certificate of Analysis
Sample Summary

SDG Number:	**GEL396189**	**Date Collected:**	**04/27/2016 08:52**	**Matrix:**	**WATER**
Lab Sample ID:	**396189007**	**Date Received:**	**04/28/2016 09:00**		
		Client:	**CPRC001**	**Project:**	**CPRC0I16023**
Client ID:	**B34YC9**	**Method:**	**SW846 8260C**	**SOP Ref:**	**GL-OA-E-038**
Batch ID:	**1563557**	**Inst:**	**VOA3.I**	**Dilution:**	**1**
Run Date:	**04/29/2016 11:51**	**Analyst:**	**CDS1**	**Purge Vol:**	**5 mL**
Prep Date:	**04/29/2016 11:51**				
Data File:	**042916V3\3G509.D**	**Column:**	**DB-624**		

CAS No.	Parmname	Qualifier	Result	Units	MDL/LOD	PQL/LOQ	RDL
71-55-6	1,1,1-Trichloroethane	U	0.300	ug/L	0.300	2.00	5.00
79-00-5	1,1,2-Trichloroethane	U	0.300	ug/L	0.300	2.00	5.00
107-06-2	1,2-Dichloroethane	U	0.300	ug/L	0.300	2.00	5.00
106-46-7	1,4-Dichlorobenzene	U	0.300	ug/L	0.300	2.00	5.00
71-43-2	Benzene	U	0.300	ug/L	0.300	2.00	5.00
75-15-0	Carbon disulfide	U	1.60	ug/L	1.60	10.0	5.00
56-23-5	Carbon tetrachloride	U	0.300	ug/L	0.300	2.00	5.00
108-90-7	Chlorobenzene	U	0.300	ug/L	0.300	2.00	5.00
67-66-3	Chloroform	J	0.360	ug/L	0.300	2.00	5.00
100-41-4	Ethylbenzene	U	0.300	ug/L	0.300	2.00	5.00
75-09-2	Methylene chloride	U	1.60	ug/L	1.60	5.00	5.00
127-18-4	Tetrachloroethylene	U	0.300	ug/L	0.300	2.00	5.00
108-88-3	Toluene	U	0.300	ug/L	0.300	2.00	5.00
79-01-6	Trichloroethylene	J	4.49	ug/L	0.300	2.00	5.00
156-59-2	cis-1,2-Dichloroethylene	U	0.300	ug/L	0.300	2.00	5.00
156-60-5	trans-1,2-Dichloroethylene	U	0.300	ug/L	0.300	2.00	5.00
75-34-3	1,1-Dichloroethane	U	0.300	ug/L	0.300	2.00	10.0
75-35-4	1,1-Dichloroethylene	U	0.300	ug/L	0.300	2.00	10.0
78-93-3	2-Butanone	U	3.00	ug/L	3.00	10.0	10.0
108-10-1	4-Methyl-2-pentanone	U	3.00	ug/L	3.00	10.0	10.0
107-12-0	Propionitrile	U	3.00	ug/L	3.00	10.0	10.0
75-01-4	Vinyl chloride	U	0.300	ug/L	0.300	2.00	10.0
1330-20-7	Xylenes (total)	U	0.300	ug/L	0.300	6.00	10.0
67-64-1	Acetone	TU	3.00	ug/L	3.00	10.0	20.0
109-99-9	Tetrahydrofuran	U	1.50	ug/L	1.50	10.0	50.0
71-36-3	n-Butyl alcohol	U	83.3	ug/L	83.3	250	100

Quality Control Summary

GEL LABORATORIES LLC
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QC Summary

Report Date: May 17, 2016

CH2MHill Plateau Remediation Company
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington

Contact: **Mr. Scot Fitzgerald**

Workorder: **396189**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Volatile-GC/MS										
Batch 1563557										
QC1203538671 LCS										
1,1,1-Trichloroethane	50.0			50.4	ug/L		101	(70%-130%)	CDS1	04/29/16 08:13
1,1,2-Trichloroethane	50.0			45.1	ug/L		90	(70%-130%)		
1,1-Dichloroethane	50.0			49.7	ug/L		99	(70%-130%)		
1,1-Dichloroethylene	50.0			48.8	ug/L		98	(70%-130%)		
1,2-Dichloroethane	50.0			49.2	ug/L		98	(70%-130%)		
1,4-Dichlorobenzene	50.0			44.9	ug/L		90	(70%-130%)		
2-Butanone	250			261	ug/L		104	(70%-130%)		
4-Methyl-2-pentanone	250			212	ug/L		85	(70%-130%)		
Acetone	250			266	ug/L		106	(70%-130%)		
Benzene	50.0			49.9	ug/L		100	(70%-130%)		
Carbon disulfide	250			242	ug/L		97	(70%-130%)		
Carbon tetrachloride	50.0			47.7	ug/L		95	(70%-130%)		
Chlorobenzene	50.0			46.1	ug/L		92	(70%-130%)		
Chloroform	50.0			48.1	ug/L		96	(70%-130%)		
Ethylbenzene	50.0			44.0	ug/L		88	(70%-130%)		
Methylene chloride	50.0			48.4	ug/L		97	(70%-130%)		
Tetrachloroethylene	50.0			43.1	ug/L		86	(70%-130%)		
Toluene	50.0			45.6	ug/L		91	(70%-130%)		
Trichloroethylene	50.0			48.0	ug/L		96	(70%-130%)		
Vinyl chloride	50.0			43.5	ug/L		87	(70%-130%)		

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QC Summary

Workorder: **396189**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Volatile-GC/MS										
Batch 1563557										
Xylenes (total)	150			133	ug/L		88	(70%-130%)	CDS1	04/29/16 08:13
cis-1,2-Dichloroethylene	50.0			47.2	ug/L		94	(70%-130%)		
n-Butyl alcohol	5000			5020	ug/L		100	(70%-130%)		
trans-1,2-Dichloroethylene	50.0			49.2	ug/L		98	(70%-130%)		
**1,2-Dichloroethane-d4	50.0			45.6	ug/L		91	(70%-130%)		
**Bromofluorobenzene	50.0			51.8	ug/L		104	(70%-130%)		
**Toluene-d8	50.0			45.5	ug/L		91	(70%-130%)		
QC1203538670 MB										
1,1,1-Trichloroethane			U	0.300	ug/L					04/29/16 09:14
1,1,2-Trichloroethane			U	0.300	ug/L					
1,1-Dichloroethane			U	0.300	ug/L					
1,1-Dichloroethylene			U	0.300	ug/L					
1,2-Dichloroethane			U	0.300	ug/L					
1,4-Dichlorobenzene			U	0.300	ug/L					
2-Butanone			U	3.00	ug/L					
4-Methyl-2-pentanone			U	3.00	ug/L					
Acetone			U	3.00	ug/L					
Benzene			U	0.300	ug/L					
Carbon disulfide			U	1.60	ug/L					
Carbon tetrachloride			U	0.300	ug/L					
Chlorobenzene			U	0.300	ug/L					
Chloroform			U	0.300	ug/L					

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QC Summary

Workorder: **396189**

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Volatile-GC/MS											
Batch 1563557											
Ethylbenzene				U	0.300	ug/L				CDS1	04/29/16 09:14
Methylene chloride				U	1.60	ug/L					
Propionitrile				U	3.00	ug/L					
Tetrachloroethylene				U	0.300	ug/L					
Tetrahydrofuran				U	1.50	ug/L					
Toluene				U	0.300	ug/L					
Trichloroethylene				U	0.300	ug/L					
Vinyl chloride				U	0.300	ug/L					
Xylenes (total)				U	0.300	ug/L					
cis-1,2-Dichloroethylene				U	0.300	ug/L					
n-Butyl alcohol				U	83.3	ug/L					
trans-1,2-Dichloroethylene				U	0.300	ug/L					
**1,2-Dichloroethane-d4	50.0				46.1	ug/L		92	(70%-130%)		
**Bromofluorobenzene	50.0				47.7	ug/L		95	(70%-130%)		
**Toluene-d8	50.0				48.1	ug/L		96	(70%-130%)		
QC1203538672 396094001 PS											
1,1,1-Trichloroethane	50.0	U	0.00		56.8	ug/L		114	(70%-130%)		04/29/16 12:54
1,1,2-Trichloroethane	50.0	U	0.00		47.1	ug/L		94	(70%-130%)		
1,1-Dichloroethane	50.0	U	0.00		55.3	ug/L		111	(70%-130%)		
1,1-Dichloroethylene	50.0	U	0.00		53.3	ug/L		107	(70%-130%)		
1,2-Dichloroethane	50.0	U	0.00		51.9	ug/L		104	(70%-130%)		
1,4-Dichlorobenzene	50.0	U	0.00		46.8	ug/L		94	(70%-130%)		

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QC Summary

Workorder: **396189**

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Volatile-GC/MS											
Batch 1563557											
2-Butanone	250	U	0.00		187	ug/L		75	(70%-130%)	CDS1	04/29/16 12:54
4-Methyl-2-pentanone	250	U	0.00		218	ug/L		87	(70%-130%)		
Acetone	250	TU	0.00	T	152	ug/L		61*	(70%-130%)		
Benzene	50.0	U	0.00		53.8	ug/L		108	(70%-130%)		
Carbon disulfide	250	U	0.00		272	ug/L		109	(70%-130%)		
Carbon tetrachloride	50.0	U	0.00		53.7	ug/L		107	(70%-130%)		
Chlorobenzene	50.0	U	0.00		49.2	ug/L		98	(70%-130%)		
Chloroform	50.0	U	0.00		51.9	ug/L		104	(70%-130%)		
Ethylbenzene	50.0	U	0.00		49.6	ug/L		99	(70%-130%)		
Methylene chloride	50.0	U	0.00		51.8	ug/L		104	(70%-130%)		
Tetrachloroethylene	50.0	U	0.00		48.7	ug/L		97	(70%-130%)		
Toluene	50.0	U	0.00		49.3	ug/L		99	(70%-130%)		
Trichloroethylene	50.0	U	0.00		53.3	ug/L		107	(70%-130%)		
Vinyl chloride	50.0	U	0.00		44.7	ug/L		89	(70%-130%)		
Xylenes (total)	150	U	0.00		147	ug/L		98	(70%-130%)		
cis-1,2-Dichloroethylene	50.0	U	0.00		52.6	ug/L		105	(70%-130%)		
n-Butyl alcohol	5000	U	0.00		5060	ug/L		101	(70%-130%)		
trans-1,2-Dichloroethylene	50.0	U	0.00		54.3	ug/L		109	(70%-130%)		
**1,2-Dichloroethane-d4	50.0		47.8		45.1	ug/L		90	(70%-130%)		
**Bromofluorobenzene	50.0		48.8		48.9	ug/L		98	(70%-130%)		
**Toluene-d8	50.0		48.7		45.7	ug/L		91	(70%-130%)		

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QC Summary

Workorder: **396189**

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Volatile-GC/MS											
Batch 1563557											
QC1203538673 396094001 PSD											
1,1,1-Trichloroethane	50.0	U	0.00		53.0	ug/L	7	106	(0%-20%)	CDS1	04/29/16 13:24
1,1,2-Trichloroethane	50.0	U	0.00		46.3	ug/L	2	93	(0%-20%)		
1,1-Dichloroethane	50.0	U	0.00		52.8	ug/L	5	106	(0%-20%)		
1,1-Dichloroethylene	50.0	U	0.00		51.0	ug/L	4	102	(0%-20%)		
1,2-Dichloroethane	50.0	U	0.00		48.7	ug/L	6	97	(0%-20%)		
1,4-Dichlorobenzene	50.0	U	0.00		46.2	ug/L	1	92	(0%-20%)		
2-Butanone	250	U	0.00		174	ug/L	7	70	(0%-20%)		
4-Methyl-2-pentanone	250	U	0.00		209	ug/L	4	84	(0%-20%)		
Acetone	250	TU	0.00	T	143	ug/L	6	57*	(0%-20%)		
Benzene	50.0	U	0.00		51.4	ug/L	5	103	(0%-20%)		
Carbon disulfide	250	U	0.00		254	ug/L	7	102	(0%-20%)		
Carbon tetrachloride	50.0	U	0.00		51.5	ug/L	4	103	(0%-20%)		
Chlorobenzene	50.0	U	0.00		47.5	ug/L	3	95	(0%-20%)		
Chloroform	50.0	U	0.00		49.8	ug/L	4	100	(0%-20%)		
Ethylbenzene	50.0	U	0.00		47.4	ug/L	5	95	(0%-20%)		
Methylene chloride	50.0	U	0.00		49.0	ug/L	5	98	(0%-20%)		
Tetrachloroethylene	50.0	U	0.00		47.9	ug/L	2	96	(0%-20%)		
Toluene	50.0	U	0.00		48.5	ug/L	2	97	(0%-20%)		
Trichloroethylene	50.0	U	0.00		51.9	ug/L	3	104	(0%-20%)		
Vinyl chloride	50.0	U	0.00		47.2	ug/L	5	94	(0%-20%)		
Xylenes (total)	150	U	0.00		140	ug/L	5	93	(0%-20%)		
cis-1,2-Dichloroethylene	50.0	U	0.00		49.1	ug/L	7	98	(0%-20%)		

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QC Summary

Workorder: **396189**

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Volatile-GC/MS											
Batch 1563557											
n-Butyl alcohol	5000	U	0.00		4770	ug/L	6	95	(0%-20%)	CDS1	04/29/16 13:24
trans-1,2-Dichloroethylene	50.0	U	0.00		51.2	ug/L	6	102	(0%-20%)		
**1,2-Dichloroethane-d4	50.0		47.8		43.5	ug/L		87	(70%-130%)		
**Bromofluorobenzene	50.0		48.8		49.3	ug/L		99	(70%-130%)		
**Toluene-d8	50.0		48.7		45.0	ug/L		90	(70%-130%)		

Notes:

The Qualifiers in this report are defined as follows:

- A The TIC is a suspected aldol-condensation product
- B The analyte was detected in both the associated QC blank and in the sample.
- C Analyte has been confirmed by GC/MS analysis
- D Results are reported from a diluted aliquot of sample.
- E Concentration exceeds the calibration range of the instrument
- J The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).Value is estimated
- N Spike Sample recovery is outside control limits.
- P Aroclor target analyte with greater than 25% difference between column analyses.
- T Spike and/or spike duplicate sample recovery is outside control limits.
- U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
- X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Y Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- Z Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
- o Analyte failed to recover within LCS limits (0rganics only)

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.
^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.
* Indicates that a Quality Control parameter was not within specifications.
For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

GEL Laboratories LLC

Report Date: May 17 2016

Volatile

Surrogate Recovery Report

SDG Number: GEL396189

Matrix Type: LIQUID

Sample ID	Client ID	DCED4 %REC	TOL %REC	BFB %REC
1203538671	LCS for batch 1563557	91	91	104
1203538670	MB for batch 1563557	92	96	95
396189004	B34YJ7	96	93	97
396189007	B34YC9	94	97	96
1203538672	B34KH6PS	90	91	98
1203538673	B34KH6PSD	87	90	99

Surrogate		Acceptance Limits
DCED4	= 1,2-Dichloroethane-d4	(70%-130%)
TOL	= Toluene-d8	(70%-130%)
BFB	= Bromofluorobenzene	(70%-130%)

* Recovery outside Acceptance Limits
# Column to be used to flag recovery values
D Sample Diluted

Metals Analysis

Case Narrative

Metals
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL396189
Work Order #: 396189

Product: Determination of Metals by ICP
Analytical Method: 6010_METALS_ICP
Analytical Procedure: GL-MA-E-013 REV# 26
Analytical Batch: 1563348

Product: Determination of Metals by ICP-MS
Analytical Method: 6020_METALS_ICPMS
Analytical Procedure: GL-MA-E-014 REV# 28
Analytical Batch: 1563385

Preparation Method: SW846 3005A
Preparation Procedure: GL-MA-E-006 REV# 13
Preparation Batches: 1563347 and 1563384

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
396189004	B34YJ7
396189005	B34YK0
396189006	B34YD4
396189007	B34YC9
1203538083	Method Blank (MB)**ICP**
1203538084	Laboratory Control Sample (LCS)
1203538087	396189004(B34YJ7L) Serial Dilution (SD)
1203538085	396189004(B34YJ7S) Matrix Spike (MS)
1203538086	396189004(B34YJ7SD) Matrix Spike Duplicate (MSD)
1203538174	Method Blank (MB)**ICP-MS**
1203538175	Laboratory Control Sample (LCS)
1203538178	396189006(B34YD4L) Serial Dilution (SD)
1203538176	396189006(B34YD4S) Matrix Spike (MS)
1203538177	396189006(B34YD4SD) Matrix Spike Duplicate (MSD)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Quality Control (QC) Information

Method Blank (MB) Statement
The method blanks (MB) analyzed with this SDG met the exception criteria with the exception of thorium. In instances where there were positive hits in the method blank, the results were evaluated and appropriately flagged on the data. 1203538174 (MB)-ICP-MS.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Qualifier Definition Report
for

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL396189 GEL Work Order: 396189

The Qualifiers in this report are defined as follows:

* Duplicate analysis not within control limits

B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).

C Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured concentration and/or decision level for associated samples.

D Results are reported from a diluted aliquot of sample.

N Spike Sample recovery is outside control limits.

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature:  **Name: Nik-Cole Elmore**

Date: 24 MAY 2016 **Title: Data Validator**

Sample Data Summary

GEL Laboratories LLC

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL396189 **CONTRACT:** CPRC0I16023 **METHOD TYPE:** SW846

SAMPLE ID: 396189004 **BASIS:** As Received **DATE COLLECTED** 27−APR−16

CLIENT ID: B34YJ7 **LEVEL:** Low **DATE RECEIVED** 28−APR−16

MATRIX: WATER **%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440−36−0	Antimony	3.5	ug/L	U	3.5	10	10	1	P	HSC	05/05/16 16:48	050516−1	1563348
7440−38−2	Arsenic	5	ug/L	U	5	30	30	1	P	HSC	05/05/16 16:48	050516−1	1563348
7440−39−3	Barium	32.8	ug/L		1	5	5	1	P	HSC	05/05/16 16:48	050516−1	1563348
7440−41−7	Beryllium	1	ug/L	U	1	5	5	1	P	HSC	05/05/16 16:48	050516−1	1563348
7440−43−9	Cadmium	1	ug/L	U	1	5	5	1	P	HSC	05/05/16 16:48	050516−1	1563348
7440−70−2	Calcium	59000	ug/L		50	200	200	1	P	HSC	05/05/16 16:48	050516−1	1563348
7440−47−3	Chromium	9.12	ug/L		1	5	5	1	P	HSC	05/05/16 16:48	050516−1	1563348
7440−48−4	Cobalt	1	ug/L	U	1	5	5	1	P	HSC	05/05/16 16:48	050516−1	1563348
7440−50−8	Copper	3	ug/L	U	3	10	10	1	P	HSC	05/05/16 16:48	050516−1	1563348
7439−89−6	Iron	30	ug/L	U	30	100	100	1	P	HSC	05/05/16 16:48	050516−1	1563348
7439−95−4	Magnesium	11600	ug/L		110	300	300	1	P	HSC	05/05/16 16:48	050516−1	1563348
7439−96−5	Manganese	2	ug/L	U	2	10	10	1	P	HSC	05/05/16 16:48	050516−1	1563348
7440−02−0	Nickel	1.5	ug/L	U	1.5	5	5	1	P	HSC	05/05/16 16:48	050516−1	1563348
7440−09−7	Potassium	4280	ug/L		50	150	150	1	P	HSC	05/05/16 16:48	050516−1	1563348
7440−22−4	Silver	1	ug/L	U	1	5	5	1	P	HSC	05/05/16 16:48	050516−1	1563348
7440−23−5	Sodium	19500	ug/L		100	300	300	1	P	HSC	05/06/16 15:28	050616−2	1563348
7440−24−6	Strontium	269	ug/L		1	5	5	1	P	HSC	05/05/16 16:48	050516−1	1563348
7440−62−2	Vanadium	5.38	ug/L		1	5	5	1	P	HSC	05/05/16 16:48	050516−1	1563348
7440−66−6	Zinc	40.9	ug/L		3.3	10	10	1	P	HSC	05/05/16 16:48	050516−1	1563348

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1563348	1563347	SW846 3005A	50	mL	50	mL	04/28/16	JP1

***Analytical Methods:**

P **SW846 3005A/6010C**

GEL Laboratories LLC

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL396189 **CONTRACT:** CPRC0I16023 **METHOD TYPE:** SW846

SAMPLE ID: 396189005 **BASIS:** As Received **DATE COLLECTED** 27−APR−16

CLIENT ID: B34YK0 **LEVEL:** Low **DATE RECEIVED** 28−APR−16

MATRIX: WATER **%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7440−36−0	Antimony	3.5	ug/L	U	3.5	10	10	1	P	HSC	05/05/16 17:10	050516−1	1563348
7440−38−2	Arsenic	5	ug/L	U	5	30	30	1	P	HSC	05/05/16 17:10	050516−1	1563348
7440−39−3	Barium	34.2	ug/L		1	5	5	1	P	HSC	05/05/16 17:10	050516−1	1563348
7440−41−7	Beryllium	1	ug/L	U	1	5	5	1	P	HSC	05/05/16 17:10	050516−1	1563348
7440−43−9	Cadmium	1	ug/L	U	1	5	5	1	P	HSC	05/05/16 17:10	050516−1	1563348
7440−70−2	Calcium	58800	ug/L		50	200	200	1	P	HSC	05/05/16 17:10	050516−1	1563348
7440−47−3	Chromium	8.94	ug/L		1	5	5	1	P	HSC	05/05/16 17:10	050516−1	1563348
7440−48−4	Cobalt	1	ug/L	U	1	5	5	1	P	HSC	05/05/16 17:10	050516−1	1563348
7440−50−8	Copper	3	ug/L	U	3	10	10	1	P	HSC	05/05/16 17:10	050516−1	1563348
7439−89−6	Iron	30	ug/L	U	30	100	100	1	P	HSC	05/05/16 17:10	050516−1	1563348
7439−95−4	Magnesium	11700	ug/L		110	300	300	1	P	HSC	05/05/16 17:10	050516−1	1563348
7439−96−5	Manganese	2	ug/L	U	2	10	10	1	P	HSC	05/05/16 17:10	050516−1	1563348
7440−02−0	Nickel	1.5	ug/L	U	1.5	5	5	1	P	HSC	05/05/16 17:10	050516−1	1563348
7440−09−7	Potassium	4260	ug/L		50	150	150	1	P	HSC	05/05/16 17:10	050516−1	1563348
7440−22−4	Silver	1	ug/L	U	1	5	5	1	P	HSC	05/05/16 17:10	050516−1	1563348
7440−23−5	Sodium	20100	ug/L		100	300	300	1	P	HSC	05/06/16 15:49	050616−2	1563348
7440−24−6	Strontium	265	ug/L		1	5	5	1	P	HSC	05/05/16 17:10	050516−1	1563348
7440−62−2	Vanadium	5.23	ug/L		1	5	5	1	P	HSC	05/05/16 17:10	050516−1	1563348
7440−66−6	Zinc	30.2	ug/L		3.3	10	10	1	P	HSC	05/05/16 17:10	050516−1	1563348

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1563348	1563347	SW846 3005A	50	mL	50	mL	04/28/16	JP1

***Analytical Methods:**

P **SW846 3005A/6010C**

GEL Laboratories LLC

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL396189 **CONTRACT:** CPRC0I16023 **METHOD TYPE:** SW846

SAMPLE ID: 396189006 **BASIS:** As Received **DATE COLLECTED** 27−APR−16

CLIENT ID: B34YD4 **LEVEL:** Low **DATE RECEIVED** 28−APR−16

MATRIX: WATER **%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429−90−5	Aluminum	15	ug/L	U	15	50	50	1	MS	BAJ	05/11/16 21:20	160511−3	1563385
7440−36−0	Antimony	1	ug/L	U	1	3	3	1	MS	BAJ	05/12/16 10:34	160511−5	1563385
7440−38−2	Arsenic	3.83	ug/L	B	1.7	5	5	1	MS	BAJ	05/11/16 21:20	160511−3	1563385
7440−39−3	Barium	41.6	ug/L		0.6	2	2	1	MS	BAJ	05/11/16 21:20	160511−3	1563385
7440−41−7	Beryllium	0.20	ug/L	U	0.2	0.5	0.5	1	MS	BAJ	05/11/16 21:20	160511−3	1563385
7440−42−8	Boron	15	ug/L	U	15	50	50	1	P	HSC	05/05/16 17:13	050516−1	1563348
7440−43−9	Cadmium	0.110	ug/L	U	0.11	1	1	1	MS	BAJ	05/11/16 21:20	160511−3	1563385
7440−70−2	Calcium	46700	ug/L		50	200	200	1	P	HSC	05/05/16 17:13	050516−1	1563348
7440−47−3	Chromium	13.1	ug/L		2	10	10	1	MS	BAJ	05/11/16 21:20	160511−3	1563385
7440−48−4	Cobalt	0.10	ug/L	U	0.1	1	1	1	MS	BAJ	05/11/16 21:20	160511−3	1563385
7440−50−8	Copper	0.350	ug/L	U	0.35	1	1	1	MS	BAJ	05/11/16 21:20	160511−3	1563385
7439−89−6	Iron	30	ug/L	U	30	100	100	1	P	HSC	05/05/16 17:13	050516−1	1563348
7439−92−1	Lead	0.50	ug/L	U	0.5	2	2	1	MS	BAJ	05/11/16 21:20	160511−3	1563385
7439−95−4	Magnesium	12900	ug/L		110	300	300	1	P	HSC	05/05/16 17:13	050516−1	1563348
7439−96−5	Manganese	1	ug/L	U	1	5	5	1	MS	BAJ	05/11/16 21:20	160511−3	1563385
7439−98−7	Molybdenum	1.96	ug/L		0.165	0.5	0.5	1	MS	BAJ	05/12/16 13:32	160512−7	1563385
7440−02−0	Nickel	0.50	ug/L	U	0.5	2	2	1	MS	BAJ	05/11/16 21:20	160511−3	1563385
7440−09−7	Potassium	5440	ug/L		50	150	150	1	P	HSC	05/05/16 17:13	050516−1	1563348
7782−49−2	Selenium	1.5	ug/L	U	1.5	5	5	1	MS	BAJ	05/11/16 21:20	160511−3	1563385
7440−22−4	Silver	0.20	ug/L	U	0.2	1	1	1	MS	BAJ	05/11/16 21:20	160511−3	1563385
7440−23−5	Sodium	15600	ug/L		100	300	300	1	P	HSC	05/06/16 15:52	050616−2	1563348
7440−24−6	Strontium	251	ug/L		2	10	10	1	MS	BAJ	05/11/16 21:20	160511−3	1563385
7440−28−0	Thallium	0.450	ug/L	U	0.45	2	2	1	MS	BAJ	05/12/16 10:34	160511−5	1563385
7440−29−1	Thorium	1.84	ug/L	CB	0.383	2	2	1	MS	BAJ	05/12/16 10:34	160511−5	1563385
7440−31−5	Tin	1	ug/L	U	1	5	5	1	MS	BAJ	05/12/16 10:34	160511−5	1563385
7440−61−1	Uranium	1.45	ug/L		0.067	0.2	0.2	1	MS	BAJ	05/12/16 12:33	160512−6	1563385
7440−62−2	Vanadium	9.37	ug/L		1	5	5	1	P	HSC	05/05/16 17:13	050516−1	1563348
7440−66−6	Zinc	3.5	ug/L	U	3.5	10	10	1	MS	BAJ	05/11/16 21:20	160511−3	1563385

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1563348	1563347	SW846 3005A	50	mL	50	mL	04/28/16	JP1
1563385	1563384	SW846 3005A	50	mL	50	mL	04/28/16	JP1

***Analytical Methods:**

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

P	**SW846 3005A/6010C**
MS	**SW846 3005A/6020A**

GEL Laboratories LLC

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

SDG No: GEL396189 **CONTRACT:** CPRC0I16023 **METHOD TYPE:** SW846

SAMPLE ID: 396189007 **BASIS:** As Received **DATE COLLECTED** 27−APR−16

CLIENT ID: B34YC9 **LEVEL:** Low **DATE RECEIVED** 28−APR−16

MATRIX: WATER **%SOLIDS:** 0

CAS No.	Analyte	Result	Units	Qual	MDL	PQL	CRDL	DF	M*	Analyst	Run Date	Analytical Run	Analytical Batch
7429−90−5	Aluminum	15	ug/L	U	15	50	50	1	MS	BAJ	05/11/16 21:33	160511−3	1563385
7440−36−0	Antimony	1	ug/L	U	1	3	3	1	MS	BAJ	05/12/16 10:40	160511−5	1563385
7440−38−2	Arsenic	3.3	ug/L	B	1.7	5	5	1	MS	BAJ	05/11/16 21:33	160511−3	1563385
7440−39−3	Barium	41.4	ug/L		0.6	2	2	1	MS	BAJ	05/11/16 21:33	160511−3	1563385
7440−41−7	Beryllium	0.20	ug/L	U	0.2	0.5	0.5	1	MS	BAJ	05/11/16 21:33	160511−3	1563385
7440−42−8	Boron	15	ug/L	U	15	50	50	1	P	HSC	05/05/16 17:16	050516−1	1563348
7440−43−9	Cadmium	0.110	ug/L	U	0.11	1	1	1	MS	BAJ	05/11/16 21:33	160511−3	1563385
7440−70−2	Calcium	48100	ug/L		50	200	200	1	P	HSC	05/05/16 17:16	050516−1	1563348
7440−47−3	Chromium	13.9	ug/L		2	10	10	1	MS	BAJ	05/11/16 21:33	160511−3	1563385
7440−48−4	Cobalt	0.10	ug/L	U	0.1	1	1	1	MS	BAJ	05/11/16 21:33	160511−3	1563385
7440−50−8	Copper	0.350	ug/L	U	0.35	1	1	1	MS	BAJ	05/11/16 21:33	160511−3	1563385
7439−89−6	Iron	30	ug/L	U	30	100	100	1	P	HSC	05/05/16 17:16	050516−1	1563348
7439−92−1	Lead	0.50	ug/L	U	0.5	2	2	1	MS	BAJ	05/11/16 21:33	160511−3	1563385
7439−95−4	Magnesium	13300	ug/L		110	300	300	1	P	HSC	05/05/16 17:16	050516−1	1563348
7439−96−5	Manganese	1	ug/L	U	1	5	5	1	MS	BAJ	05/11/16 21:33	160511−3	1563385
7439−98−7	Molybdenum	2.05	ug/L		0.165	0.5	0.5	1	MS	BAJ	05/12/16 13:37	160512−7	1563385
7440−02−0	Nickel	0.50	ug/L	U	0.5	2	2	1	MS	BAJ	05/11/16 21:33	160511−3	1563385
7440−09−7	Potassium	5610	ug/L		50	150	150	1	P	HSC	05/05/16 17:16	050516−1	1563348
7782−49−2	Selenium	1.5	ug/L	U	1.5	5	5	1	MS	BAJ	05/11/16 21:33	160511−3	1563385
7440−22−4	Silver	0.20	ug/L	U	0.2	1	1	1	MS	BAJ	05/11/16 21:33	160511−3	1563385
7440−23−5	Sodium	16000	ug/L		100	300	300	1	P	HSC	05/06/16 15:55	050616−2	1563348
7440−24−6	Strontium	251	ug/L		2	10	10	1	MS	BAJ	05/11/16 21:33	160511−3	1563385
7440−28−0	Thallium	0.450	ug/L	U	0.45	2	2	1	MS	BAJ	05/12/16 10:40	160511−5	1563385
7440−29−1	Thorium	1.13	ug/L	CB	0.383	2	2	1	MS	BAJ	05/12/16 10:40	160511−5	1563385
7440−31−5	Tin	1	ug/L	U	1	5	5	1	MS	BAJ	05/12/16 10:40	160511−5	1563385
7440−61−1	Uranium	1.48	ug/L		0.067	0.2	0.2	1	MS	BAJ	05/12/16 12:39	160512−6	1563385
7440−62−2	Vanadium	9.71	ug/L		1	5	5	1	P	HSC	05/05/16 17:16	050516−1	1563348
7440−66−6	Zinc	3.5	ug/L	U	3.5	10	10	1	MS	BAJ	05/11/16 21:33	160511−3	1563385

Prep Information:

Analytical Batch	Prep Batch	Prep Method	Initial wt./vol.	Units	Final wt./vol.	Units	Date	Analyst
1563348	1563347	SW846 3005A	50	mL	50	mL	04/28/16	JP1
1563385	1563384	SW846 3005A	50	mL	50	mL	04/28/16	JP1

***Analytical Methods:**

METALS
−1−
INORGANICS ANALYSIS DATA PACKAGE

P	**SW846 3005A/6010C**
MS	**SW846 3005A/6020A**

Quality Control Summary

GEL LABORATORIES LLC
2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Report Date: May 24, 2016

CH2MHill Plateau Remediation Company
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington

Contact: **Mr. Scot Fitzgerald**

Workorder: **396189**

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis - ICPMS										
Batch 1563385										
QC1203538175 LCS										
Aluminum	2000			2090	ug/L		104	(80%-120%)	BAJ	05/11/16 21:17
Antimony	50.0			50.0	ug/L		100	(80%-120%)		05/12/16 10:32
Arsenic	50.0			53.3	ug/L		107	(80%-120%)		05/11/16 21:17
Barium	50.0			49.4	ug/L		98.9	(80%-120%)		
Beryllium	50.0			57.4	ug/L		115	(80%-120%)		
Cadmium	50.0			49.9	ug/L		99.7	(80%-120%)		
Chromium	50.0			51.9	ug/L		104	(80%-120%)		
Cobalt	50.0			49.8	ug/L		99.6	(80%-120%)		
Copper	50.0			49.8	ug/L		99.6	(80%-120%)		
Lead	50.0			50.9	ug/L		102	(80%-120%)		
Manganese	50.0			51.3	ug/L		103	(80%-120%)		
Molybdenum	50.0			49.7	ug/L		99.3	(80%-120%)		05/12/16 13:30
Nickel	50.0			50.8	ug/L		102	(80%-120%)		05/11/16 21:17
Selenium	50.0			54.5	ug/L		109	(80%-120%)		
Silver	50.0			51.2	ug/L		102	(80%-120%)		
Strontium	50.0			51.0	ug/L		102	(80%-120%)		
Thallium	50.0			51.4	ug/L		103	(80%-120%)		05/12/16 10:32
Thorium	50.0			47.3	ug/L		94.7	(80%-120%)		
Tin	50.0			51.1	ug/L		102	(80%-120%)		
Uranium	50.0			50.7	ug/L		101	(80%-120%)		05/12/16 12:32

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QC Summary

Workorder: **396189**

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis - ICPMS										
Batch 1563385										
Zinc	50.0			51.6	ug/L		103	(80%-120%)	BAJ	05/11/16 21:17
QC1203538174 MB										
Aluminum			U	15.0	ug/L					05/11/16 21:14
Antimony			U	1.00	ug/L					05/12/16 10:30
Arsenic			U	1.70	ug/L					05/11/16 21:14
Barium			U	0.600	ug/L					
Beryllium			U	0.200	ug/L					
Cadmium			U	0.110	ug/L					
Chromium			U	2.00	ug/L					
Cobalt			U	0.100	ug/L					
Copper			U	0.350	ug/L					
Lead			U	0.500	ug/L					
Manganese			U	1.00	ug/L					
Molybdenum			U	0.165	ug/L					05/12/16 13:29
Nickel			U	0.500	ug/L					05/11/16 21:14
Selenium			U	1.50	ug/L					
Silver			U	0.200	ug/L					
Strontium			U	2.00	ug/L					
Thallium			U	0.450	ug/L					05/12/16 10:30
Thorium			B	0.543	ug/L					
Tin			U	1.00	ug/L					
Uranium			U	0.067	ug/L					05/12/16 12:30

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QC Summary

Workorder: **396189**

Parmname	NOM		Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis - ICPMS											
Batch 1563385											
Zinc				U	3.50	ug/L				BAJ	05/11/16 21:14
QC1203538176 396189006 MS											
Aluminum	2000	U	15.0		2030	ug/L		101	(75%-125%)		05/11/16 21:22
Antimony	50.0	U	1.00		51.0	ug/L		102	(75%-125%)		05/12/16 10:35
Arsenic	50.0	B	3.83		55.7	ug/L		104	(75%-125%)		05/11/16 21:22
Barium	50.0		41.6		90.2	ug/L		97	(75%-125%)		
Beryllium	50.0	U	0.200		55.7	ug/L		111	(75%-125%)		
Cadmium	50.0	U	0.110		49.8	ug/L		99.6	(75%-125%)		
Chromium	50.0		13.1		62.8	ug/L		99.4	(75%-125%)		
Cobalt	50.0	U	0.100		48.3	ug/L		96.6	(75%-125%)		
Copper	50.0	U	0.350		48.2	ug/L		96.3	(75%-125%)		
Lead	50.0	U	0.500		49.8	ug/L		99.5	(75%-125%)		
Manganese	50.0	U	1.00		51.0	ug/L		102	(75%-125%)		
Molybdenum	50.0		1.96		52.4	ug/L		101	(75%-125%)		05/12/16 13:33
Nickel	50.0	U	0.500		48.3	ug/L		96.2	(75%-125%)		05/11/16 21:22
Selenium	50.0	U	1.50		53.9	ug/L		106	(75%-125%)		
Silver	50.0	U	0.200		51.5	ug/L		103	(75%-125%)		
Strontium	50.0		251		304	ug/L		N/A	(75%-125%)		
Thallium	50.0	U	0.450		48.8	ug/L		97.2	(75%-125%)		05/12/16 10:35
Thorium	50.0	BC	1.84		47.9	ug/L		92.1	(75%-125%)		
Tin	50.0	U	1.00		50.3	ug/L		100	(75%-125%)		
Uranium	50.0		1.45		51.6	ug/L		100	(75%-125%)		05/12/16 12:35

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QC Summary

Workorder: **396189**

Parmname	NOM		Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis - ICPMS											
Batch 1563385											
Zinc	50.0	U	3.50		49.5	ug/L		97.7	(75%-125%)	BAJ	05/11/16 21:22
QC1203538177 396189006 MSD											
Aluminum	2000	U	15.0		2090	ug/L	2.82	104	(0%-20%)		05/11/16 21:25
Antimony	50.0	U	1.00		49.7	ug/L	2.69	98.8	(0%-20%)		05/12/16 10:37
Arsenic	50.0	B	3.83		55.4	ug/L	0.576	103	(0%-20%)		05/11/16 21:25
Barium	50.0		41.6		88.2	ug/L	2.18	93.1	(0%-20%)		
Beryllium	50.0	U	0.200		56.1	ug/L	0.571	112	(0%-20%)		
Cadmium	50.0	U	0.110		49.2	ug/L	1.13	98.5	(0%-20%)		
Chromium	50.0		13.1		60.6	ug/L	3.55	95.1	(0%-20%)		
Cobalt	50.0	U	0.100		47.1	ug/L	2.54	94.1	(0%-20%)		
Copper	50.0	U	0.350		47.6	ug/L	1.28	95	(0%-20%)		
Lead	50.0	U	0.500		48.6	ug/L	2.28	97.2	(0%-20%)		
Manganese	50.0	U	1.00		50.4	ug/L	1.16	101	(0%-20%)		
Molybdenum	50.0		1.96		53.0	ug/L	1.15	102	(0%-20%)		05/12/16 13:34
Nickel	50.0	U	0.500		49.8	ug/L	3	99.1	(0%-20%)		05/11/16 21:25
Selenium	50.0	U	1.50		53.3	ug/L	1.03	105	(0%-20%)		
Silver	50.0	U	0.200		50.7	ug/L	1.46	101	(0%-20%)		
Strontium	50.0		251		297	ug/L	2.52	N/A	(0%-20%)		
Thallium	50.0	U	0.450		48.1	ug/L	1.49	95.7	(0%-20%)		05/12/16 10:37
Thorium	50.0	BC	1.84		49.2	ug/L	2.8	94.8	(0%-20%)		
Tin	50.0	U	1.00		50.6	ug/L	0.571	101	(0%-20%)		
Uranium	50.0		1.45		51.5	ug/L	0.173	100	(0%-20%)		05/12/16 12:36

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QC Summary

Workorder: **396189**

Parmname	NOM		Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis - ICPMS											
Batch 1563385											
Zinc	50.0	U	3.50		48.6	ug/L	1.78	95.9	(0%-20%)	BAJ	05/11/16 21:25
QC1203538178 396189006 SDILT											
Aluminum		U	2.96	DU	75.0	ug/L	N/A		(0%-10%)		05/11/16 21:30
Antimony		U	0.255	DU	5.00	ug/L	N/A		(0%-10%)		05/12/16 10:38
Arsenic		B	3.83	DU	8.50	ug/L	N/A		(0%-10%)		05/11/16 21:30
Barium			41.6	D	8.19	ug/L	1.73		(0%-10%)		
Beryllium		U	0.014	DU	1.00	ug/L	N/A		(0%-10%)		
Cadmium		U	-0.01	DU	0.550	ug/L	N/A		(0%-10%)		
Chromium			13.1	D	2.51	ug/L	4.32		(0%-10%)		
Cobalt		U	0.024	DU	0.500	ug/L	N/A		(0%-10%)		
Copper		U	0.075	D	0.377	ug/L	N/A		(0%-10%)		
Lead		U	0.039	DU	2.50	ug/L	N/A		(0%-10%)		
Manganese		U	0.105	DU	5.00	ug/L	N/A		(0%-10%)		
Molybdenum			1.96	D	0.434	ug/L	10.9		(0%-10%)		05/12/16 13:36
Nickel		U	0.252	DU	2.50	ug/L	N/A		(0%-10%)		05/11/16 21:30
Selenium		U	0.999	DU	7.50	ug/L	N/A		(0%-10%)		
Silver		U	0.00	DU	1.00	ug/L	N/A		(0%-10%)		
Strontium			251	D	49.2	ug/L	1.93		(0%-10%)		
Thallium		U	0.217	DU	2.25	ug/L	N/A		(0%-10%)		05/12/16 10:38
Thorium		BC	1.84	D	1.34	ug/L	265		(0%-10%)		
Tin		U	0.154	DU	5.00	ug/L	N/A		(0%-10%)		
Uranium			1.45	D	0.313	ug/L	8.08		(0%-10%)		05/12/16 12:38

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QC Summary

Workorder: **396189**

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis - ICPMS										
Batch 1563385										
Zinc	U	0.681	DU	17.5	ug/L	N/A		(0%-10%)	BAJ	05/11/16 21:30
Metals Analysis-ICP										
Batch 1563348										
QC1203538084 LCS										
Antimony	500			495	ug/L		99	(80%-120%)	HSC	05/05/16 16:45
Arsenic	500			459	ug/L		91.7	(80%-120%)		
Barium	500			482	ug/L		96.3	(80%-120%)		
Beryllium	500			480	ug/L		96	(80%-120%)		
Boron	500			497	ug/L		99.4	(80%-120%)		
Cadmium	500			476	ug/L		95.2	(80%-120%)		
Calcium	5000			4840	ug/L		96.9	(80%-120%)		
Chromium	500			477	ug/L		95.3	(80%-120%)		
Cobalt	500			482	ug/L		96.4	(80%-120%)		
Copper	500			487	ug/L		97.4	(80%-120%)		
Iron	5000			4870	ug/L		97.5	(80%-120%)		
Magnesium	5000			4870	ug/L		97.4	(80%-120%)		
Manganese	500			472	ug/L		94.5	(80%-120%)		
Nickel	500			486	ug/L		97.2	(80%-120%)		
Potassium	5000			4720	ug/L		94.5	(80%-120%)		
Silver	500			480	ug/L		96	(80%-120%)		
Sodium	5000			4640	ug/L		92.7	(80%-120%)		05/06/16 15:25
Strontium	500			488	ug/L		97.5	(80%-120%)		05/05/16 16:45
Vanadium	500			485	ug/L		97	(80%-120%)		

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QC Summary

Workorder: **396189**

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis-ICP										
Batch 1563348										
Zinc	500			467	ug/L		93.4	(80%-120%)	HSC	05/05/16 16:45
QC1203538083 MB										
Antimony			U	3.50	ug/L					05/05/16 16:41
Arsenic			U	5.00	ug/L					
Barium			U	1.00	ug/L					
Beryllium			U	1.00	ug/L					
Boron			U	15.0	ug/L					
Cadmium			U	1.00	ug/L					
Calcium			U	50.0	ug/L					
Chromium			U	1.00	ug/L					
Cobalt			U	1.00	ug/L					
Copper			U	3.00	ug/L					
Iron			U	30.0	ug/L					
Magnesium			U	110	ug/L					
Manganese			U	2.00	ug/L					
Nickel			U	1.50	ug/L					
Potassium			U	50.0	ug/L					
Silver			U	1.00	ug/L					
Sodium			U	100	ug/L					05/06/16 15:21
Strontium			U	1.00	ug/L					05/05/16 16:41
Vanadium			U	1.00	ug/L					
Zinc			U	3.30	ug/L					

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QC Summary

Workorder: **396189**

Parmname	NOM		Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis-ICP											
Batch 1563348											
QC1203538085 396189004 MS											
Antimony	500	U	3.50		501	ug/L		99.8	(75%-125%)	HSC	05/05/16 16:51
Arsenic	500	U	5.00		472	ug/L		94.3	(75%-125%)		
Barium	500		32.8		506	ug/L		94.6	(75%-125%)		
Beryllium	500	U	1.00		478	ug/L		95.5	(75%-125%)		
Boron	500	B	16.2		530	ug/L		103	(75%-125%)		
Cadmium	500	U	1.00		461	ug/L		92.3	(75%-125%)		
Calcium	5000		59000		64200	ug/L		N/A	(75%-125%)		
Chromium	500		9.12		477	ug/L		93.5	(75%-125%)		
Cobalt	500	U	1.00		453	ug/L		90.5	(75%-125%)		
Copper	500	U	3.00		491	ug/L		97.8	(75%-125%)		
Iron	5000	U	30.0		4890	ug/L		97.4	(75%-125%)		
Magnesium	5000		11600		16600	ug/L		99.3	(75%-125%)		
Manganese	500	U	2.00		459	ug/L		91.8	(75%-125%)		
Nickel	500	U	1.50		455	ug/L		90.9	(75%-125%)		
Potassium	5000		4280		9230	ug/L		99	(75%-125%)		
Silver	500	U	1.00		478	ug/L		95.6	(75%-125%)		
Sodium	5000		19500		25300	ug/L		115	(75%-125%)		05/06/16 15:32
Strontium	500		269		756	ug/L		97.6	(75%-125%)		05/05/16 16:51
Vanadium	500		5.38		496	ug/L		98.2	(75%-125%)		
Zinc	500		40.9		497	ug/L		91.2	(75%-125%)		
QC1203538086 396189004 MSD											
Antimony	500	U	3.50		495	ug/L	1.2	98.6	(0%-20%)		05/05/16 16:55

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QC Summary

Workorder: **396189**

Parmname	NOM		Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis-ICP											
Batch 1563348											
Arsenic	500	U	5.00		465	ug/L	1.62	92.8	(0%-20%)	HSC	05/05/16 16:55
Barium	500		32.8		500	ug/L	1.09	93.5	(0%-20%)		
Beryllium	500	U	1.00		472	ug/L	1.17	94.4	(0%-20%)		
Boron	500	B	16.2		529	ug/L	0.317	102	(0%-20%)		
Cadmium	500	U	1.00		457	ug/L	0.998	91.3	(0%-20%)		
Calcium	5000		59000		63900	ug/L	0.534	N/A	(0%-20%)		
Chromium	500		9.12		472	ug/L	0.929	92.7	(0%-20%)		
Cobalt	500	U	1.00		449	ug/L	0.905	89.7	(0%-20%)		
Copper	500	U	3.00		488	ug/L	0.529	97.3	(0%-20%)		
Iron	5000	U	30.0		4820	ug/L	1.29	96.2	(0%-20%)		
Magnesium	5000		11600		16400	ug/L	1.29	95	(0%-20%)		
Manganese	500	U	2.00		454	ug/L	0.977	90.9	(0%-20%)		
Nickel	500	U	1.50		450	ug/L	1.18	89.8	(0%-20%)		
Potassium	5000		4280		9200	ug/L	0.347	98.4	(0%-20%)		
Silver	500	U	1.00		476	ug/L	0.384	95.2	(0%-20%)		
Sodium	5000		19500		25000	ug/L	1.07	109	(0%-20%)		05/06/16 15:35
Strontium	500		269		753	ug/L	0.489	96.8	(0%-20%)		05/05/16 16:55
Vanadium	500		5.38		492	ug/L	0.986	97.2	(0%-20%)		
Zinc	500		40.9		496	ug/L	0.139	91.1	(0%-20%)		
QC1203538087 396189004 SDILT											
Antimony		U	2.03	DU	17.5	ug/L	N/A		(0%-10%)		05/05/16 16:58
Arsenic		U	0.709	DU	25.0	ug/L	N/A		(0%-10%)		

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QC Summary

Workorder: **396189**

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date Time
Metals Analysis-ICP										
Batch 1563348										
Barium		32.8	D	6.75	ug/L	2.77		(0%-10%)	HSC	05/05/16 16:58
Beryllium	U	0.239	DU	5.00	ug/L	N/A		(0%-10%)		
Boron	B	16.2	DU	75.0	ug/L	N/A		(0%-10%)		
Cadmium	U	0.0175	DU	5.00	ug/L	N/A		(0%-10%)		
Calcium		59000	D	11800	ug/L	.117		(0%-10%)		
Chromium		9.12	D	1.76	ug/L	3.51		(0%-10%)		
Cobalt	U	-0.198	DU	5.00	ug/L	N/A		(0%-10%)		
Copper	U	1.54	DU	15.0	ug/L	N/A		(0%-10%)		
Iron	U	16.2	DU	150	ug/L	N/A		(0%-10%)		
Magnesium		11600	D	2360	ug/L	1.33		(0%-10%)		
Manganese	U	-0.129	DU	10.0	ug/L	N/A		(0%-10%)		
Nickel	U	1.07	DU	7.50	ug/L	N/A		(0%-10%)		
Potassium		4280	D	818	ug/L	4.49		(0%-10%)		
Silver	U	-0.815	DU	5.00	ug/L	N/A		(0%-10%)		
Sodium		19500	D	3790	ug/L	2.95		(0%-10%)		05/06/16 15:38
Strontium		269	D	54.1	ug/L	.717		(0%-10%)		05/05/16 16:58
Vanadium		5.38	D	1.40	ug/L	30.4		(0%-10%)		
Zinc		40.9	D	9.34	ug/L	14.1		(0%-10%)		

Notes:

The Qualifiers in this report are defined as follows:

* Duplicate analysis not within control limits

\+ Correlation coefficient for Method of Standard Additions (MSA) is < 0.995

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QC Summary

Workorder: **396189**

Parmname	NOM	Sample	Qual	QC	Units	RPD/D%	REC%	Range	Anlst	Date	Time

B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).

C Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured concentration and/or decision level for associated samples.

D Results are reported from a diluted aliquot of sample.

E Reported value is estimated due to interferences. See comment in narrative.

M Duplicate precision not met.

N Spike Sample recovery is outside control limits.

S Reported value determined by the Method of Standard Additions (MSA)

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

W Post-digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.

X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

Y Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

Z Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.
^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.
* Indicates that a Quality Control parameter was not within specifications.
For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

General Chem Analysis

Case Narrative

General Chemistry
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL396189
Work Order #: 396189

Product: **Ion Chromatography**
Analytical Method: 9056_ANIONS_IC
Analytical Procedure: GL-GC-E-086 REV# 25
Analytical Batch: 1563193

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
396189003	B34YD1
1203537648	Method Blank (MB)
1203537649	Laboratory Control Sample (LCS)
1203537650	396189003(B34YD1) Sample Duplicate (DUP)
1203537651	396189003(B34YD1) Post Spike (PS)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Technical Information

Sample Dilutions
The following samples 1203537650 (B34YD1DUP), 1203537651 (B34YD1PS) and 396189003 (B34YD1) were diluted because target analyte concentrations exceeded the calibration range.

Analyte	396189 003
Chloride	10X
Sulfate	10X

Miscellaneous Information

Manual Integrations
Samples 1203537650 (B34YD1DUP), 1203537651 (B34YD1PS) and 396189003 (B34YD1) were manually integrated to correctly position the baseline as set in the calibration standards.

Product: **Hexavalent Chromium**
Analytical Method: 7196_CR6
Analytical Procedure: GL-GC-E-044 REV# 21
Analytical Batch: 1563213

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
396189001	B34YD0
396189002	B34YD5
1203537697	Method Blank (MB)
1203537698	Laboratory Control Sample (LCS)
1203537699	396189001(B34YD0) Sample Duplicate (DUP)
1203537700	396189001(B34YD0) Post Spike (PS)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Product: **Alkalinity**
Analytical Method: 2320_ALKALINITY
Analytical Procedure: GL-GC-E-033 REV# 12
Analytical Batch: 1565493

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
396189007	B34YC9
1203543740	Method Blank (MB)
1203543741	Laboratory Control Sample (LCS)
1203543755	396091002(NonSDG) Sample Duplicate (DUP)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

There are no exceptions, anomalies or deviations from the specified methods. All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Qualifier Definition Report
for

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL396189 GEL Work Order: 396189

The Qualifiers in this report are defined as follows:

B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).

D Results are reported from a diluted aliquot of sample.

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature:  **Name: Kristen Mizzell**

Date: 20 MAY 2016 **Title: Analyst I**

Sample Data Summary

GEL LABORATORIES LLC
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Certificate of Analysis

Report Date: May 20, 2016

Company :	CH2MHill Plateau Remediation Company
Address :	MSIN R3-50 CHPRC PO Box 1600 Richland, Washington 99352
Contact:	Mr. Scot Fitzgerald
Project:	CHPRC SAF I16-023

Client Sample ID:	B34YD0	Project:	CPRC0I16023
Sample ID:	396189001	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	27-APR-16 08:52		
Receive Date:	28-APR-16		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Spectrometric Analysis											
7196_CR6: COMMON "As Received"											
Hexavalent Chromium		0.0133	0.003	0.010	mg/L	1	AMB	04/28/16	1002	1563213	1

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	7196_CR6	

Notes:

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: May 20, 2016

Company :	CH2MHill Plateau Remediation Company
Address :	MSIN R3-50 CHPRC PO Box 1600 Richland, Washington 99352
Contact:	Mr. Scot Fitzgerald
Project:	CHPRC SAF I16-023

Client Sample ID:	B34YD5	Project:	CPRC0I16023
Sample ID:	396189002	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	27-APR-16 08:52		
Receive Date:	28-APR-16		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Spectrometric Analysis											
7196_CR6: COMMON "As Received"											
Hexavalent Chromium		0.0145	0.003	0.010	mg/L	1	AMB	04/28/16	1004	1563213	1

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	7196_CR6	

Notes:

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: May 20, 2016

Company : CH2MHill Plateau Remediation Company
Address : MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: Mr. Scot Fitzgerald
Project: CHPRC SAF I16-023

Client Sample ID: B34YD1
Sample ID: 396189003
Matrix: WATER
Collect Date: 27-APR-16 08:52
Receive Date: 28-APR-16
Collector: Client

Project: CPRC0I16023
Client ID: CPRC001

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Ion Chromatography											
9056_ANIONS_IC: COMMON "As Received"											
Fluoride	B	213	33.0	500	ug/L	1	MXL2	04/28/16	1232	1563193	1
Nitrate-N		4770	33.0	250	ug/L	1					
Nitrite-N	U	38.0	38.0	250	ug/L	1					
Chloride	D	11100	670	2000	ug/L	10	MXL2	04/28/16	1406	1563193	2
Sulfate	D	64200	1330	4000	ug/L	10					

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	9056_ANIONS_IC	
2	9056_ANIONS_IC	

Notes:

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Certificate of Analysis

Report Date: May 20, 2016

Company :	CH2MHill Plateau Remediation Company
Address :	MSIN R3-50 CHPRC PO Box 1600 Richland, Washington 99352
Contact:	Mr. Scot Fitzgerald
Project:	CHPRC SAF I16-023

Client Sample ID:	B34YC9	Project:	CPRC0I16023
Sample ID:	396189007	Client ID:	CPRC001
Matrix:	WATER		
Collect Date:	27-APR-16 08:52		
Receive Date:	28-APR-16		
Collector:	Client		

Parameter	Qualifier	Result	DL	RL	Units	DF	Analyst	Date	Time	Batch	Method
Titration and Ion Analysis											
2320_ALKALINITY: GW 01 "As Received"											
Alkalinity, Total as CaCO3		111000	725	1000	ug/L		AMB	05/09/16	1327	1565493	1
Bicarbonate alkalinity (CaCO3)		111000	725	1000	ug/L						
Carbonate alkalinity (CaCO3)	U	725	725	1000	ug/L						
Hydroxide alkalinity as CaCO3	U	725	725	1000	ug/L						

The following Analytical Methods were performed:

Method	Description	Analyst Comments
1	2320_ALKALINITY	

Notes:

Quality Control Summary

GEL LABORATORIES LLC
2040 Savage Road Charleston, SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Report Date: May 20, 2016

CH2MHill Plateau Remediation Company
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington

Contact: **Mr. Scot Fitzgerald**

Workorder: **396189**

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Ion Chromatography											
Batch 1563193											
QC1203537650 396189003 DUP											
Chloride		D	11100	D	10900	ug/L	1.16		(0%-20%)	MXL2	04/28/16 14:38
Fluoride		B	213	B	215	ug/L	1.07 ^		(+/-500)		04/28/16 13:03
Nitrate-N			4770		4770	ug/L	0.0524		(0%-20%)		
Nitrite-N		U	38.0	U	38.0	ug/L	N/A				
Sulfate		D	64200	D	64100	ug/L	0.154		(0%-20%)		04/28/16 14:38
QC1203537649 LCS											
Chloride	5000				4710	ug/L		94.1	(80%-120%)		04/28/16 12:01
Fluoride	2500				2390	ug/L		95.5	(80%-120%)		
Nitrate-N	2500				2370	ug/L		94.8	(80%-120%)		
Nitrite-N	2500				2240	ug/L		89.4	(80%-120%)		
Sulfate	10000				9630	ug/L		96.3	(80%-120%)		
QC1203537648 MB											
Chloride				U	67.0	ug/L					04/28/16 11:29
Fluoride				U	33.0	ug/L					
Nitrate-N				U	33.0	ug/L					
Nitrite-N				U	38.0	ug/L					
Sulfate				U	133	ug/L					
QC1203537651 396189003 PS											
Chloride	5.00	D	1.11	D	5.91	mg/L		96.1	(75%-125%)		04/28/16 15:09
Fluoride	2.50	B	0.213		2.58	mg/L		94.6	(75%-125%)		04/28/16 13:35
Nitrate-N	2.50		4.77		7.46	mg/L		108	(75%-125%)		

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QC Summary

Workorder: **396189**

Parmname	NOM		Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date Time
Ion Chromatography											
Batch 1563193											
Nitrite-N	2.50	U	0.00		2.37	mg/L		94.8	(75%-125%)		
Sulfate	10.0	D	6.42	D	16.7	mg/L		103	(75%-125%)	MXL2	04/28/16 15:09
Spectrometric Analysis											
Batch 1563213											
QC1203537699 396189001 DUP											
Hexavalent Chromium			0.0133		0.0145	mg/L	8.25 ^		(+/-0.010)	AMB	04/28/16 10:03
QC1203537698 LCS											
Hexavalent Chromium	0.050				0.0478	mg/L		95.6	(80%-120%)		04/28/16 10:01
QC1203537697 MB											
Hexavalent Chromium				U	0.003	mg/L					04/28/16 10:01
QC1203537700 396189001 PS											
Hexavalent Chromium	0.050		0.0133		0.0616	mg/L		96.4	(75%-125%)		04/28/16 10:03
Titration and Ion Analysis											
Batch 1565493											
QC1203543755 396091002 DUP											
Alkalinity, Total as CaCO3			110000		110000	ug/L	0.466		(0%-20%)	AMB	05/09/16 12:47
QC1203543741 LCS											
Alkalinity, Total as CaCO3	50000				52700	ug/L		105	(80%-120%)		05/09/16 12:38
QC1203543740 MB											
Alkalinity, Total as CaCO3				U	725	ug/L					05/09/16 12:37
Bicarbonate alkalinity (CaCO3)				U	725	ug/L					
Carbonate alkalinity (CaCO3)				U	725	ug/L					
Hydroxide alkalinity as CaCO3				U	725	ug/L					

Notes:

The Qualifiers in this report are defined as follows:

- < Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide
- > Result greater than quantifiable range or greater than upper limit of the analysis range
- B The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
- C Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured concentration and/or decision level for associated samples.
- D Results are reported from a diluted aliquot of sample.

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QC Summary

Workorder: **396189**

Parmname	NOM	Sample	Qual	QC	Units	RPD%	REC%	Range	Anlst	Date	Time

N Spike Sample recovery is outside control limits.

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

X Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

Y Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

Z Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.
^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptance criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.
* Indicates that a Quality Control parameter was not within specifications.
For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.

Radiological Analysis

Case Narrative

Radiochemistry
Technical Case Narrative
CH2MHill Plateau Remediation Company (CPRC)
SDG #: GEL396189
Work Order #: 396189

Product: **9310_ALPHABETA_GPC: COMMON**
Analytical Method: 9310_ALPHABETA_GPC
Analytical Procedure: GL-RAD-A-001 REV# 18
Analytical Batch: 1564956

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
396189007	B34YC9
1203542215	Method Blank (MB)
1203542216	396596001(NonSDG) Sample Duplicate (DUP)
1203542217	396596001(NonSDG) Matrix Spike (MS)
1203542218	396596001(NonSDG) Matrix Spike Duplicate (MSD)
1203542219	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Quality Control (QC) Information

QC Information
All of the QC samples meet the required acceptance limits with the following exceptions: The matrix spike and matrix spike duplicate, 1203542217 (Non SDG 396596001MS) and 1203542218 (Non SDG 396596001MSD), did not meet the client's alpha relative percent difference/relative error ratio requirement; however, they do meet the recovery requirement. The sample and the duplicate, 1203542216 (Non SDG 396596001DUP), did not meet the alpha relative percent difference requirement; however, they do meet the relative error ratio requirement with a value of 1.94.

Technical Information

Gross Alpha/Beta Preparation Information
High hygroscopic salt content in evaporated samples can cause the sample mass to fluctuate due to moisture absorption. To minimize this interference, the salts are converted to oxides by heating the sample under a flame until a dull red color is obtained. The conversion to oxides stabilizes the sample weight and ensures that proper alpha/beta efficiencies are assigned for each sample. Volatile radioisotopes of carbon, hydrogen, technetium, polonium and cesium may be lost during sample heating.

Recounts
Samples 1203542217 (Non SDG 396596001MS), 1203542218 (Non SDG 396596001MSD) and 1203542219 (LCS) were recounted due to high recovery. The recounts are reported.

Miscellaneous Information

Additional Comments
The matrix spike and matrix spike duplicate, 1203542217 (Non SDG 396596001MS) and 1203542218 (Non SDG 396596001MSD), aliquots were reduced to conserve sample volume.

Product: **TC99_EIE_LSC: COMMON**
Analytical Method: TC99_EIE_LSC
Analytical Procedure: GL-RAD-A-059 REV# 4
Analytical Batch: 1563932

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
396189007	B34YC9
1203539558	Method Blank (MB)
1203539559	395767006(B34Y25) Sample Duplicate (DUP)
1203539560	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Technical Information

Recounts
Sample 396189007 (B34YC9) was recounted to verify sample results. The recount results are similar to the original results. Original results are reported.

Product: **C14_LSC: COMMON**
Analytical Method: C14_LSC
Analytical Procedure: GL-RAD-A-003 REV# 15
Analytical Batch: 1565259

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
396189007	B34YC9
1203543070	Method Blank (MB)
1203543071	395767006(B34Y25) Sample Duplicate (DUP)
1203543072	395767006(B34Y25) Matrix Spike (MS)
1203543073	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Quality Control (QC) Information

QC Information
All of the QC samples meet the required acceptance limits with the following exceptions: The sample and the duplicate, 1203543071 (B34Y25DUP), did not meet the relative percent difference requirement; however, they do meet the relative error ratio requirement with a value of 1.83.

Technical Information

Recounts
Samples 1203543071 (B34Y25DUP) and 396189007 (B34YC9) were recounted to verify sample results. The recount results are similar to the original results. Original results are reported.

Product: **TRITIUM_DIST_LSC: COMMON**
Analytical Method: TRITIUM_DIST_LSC
Analytical Procedure: GL-RAD-A-002 REV# 21
Analytical Batch: 1565641

The following samples were analyzed using the above methods and analytical procedure(s).

GEL Sample ID#	Client Sample Identification
396189007	B34YC9
1203544163	Method Blank (MB)
1203544164	395767006(B34Y25) Sample Duplicate (DUP)
1203544165	395767006(B34Y25) Matrix Spike (MS)
1203544166	Laboratory Control Sample (LCS)

The samples in this SDG were analyzed on an "as received" basis.

Data Summary:

All sample data provided in this report met the acceptance criteria specified in the analytical methods and procedures for initial calibration, continuing calibration, instrument controls and process controls where applicable, with the following exceptions.

Technical Information

Recounts
Sample 1203544165 (B34Y25MS) was recounted due to low recovery. The recount is reported. Sample 1203544163 (MB) was recounted due to high MDC. The recount is reported. Sample 396189007 (B34YC9) was recounted to verify sample results. Recount is reported.

Certification Statement

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless otherwise noted in the analytical case narrative.

GEL LABORATORIES LLC

2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

Qualifier Definition Report
for

CPRC001 CH2MHill Plateau Remediation Company

Client SDG: GEL396189 GEL Work Order: 396189

The Qualifiers in this report are defined as follows:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

Review/Validation

GEL requires all analytical data to be verified by a qualified data reviewer. In addition, all CLP-like deliverables receive a third level review of the fractional data package.

The following data validator verified the information presented in this data report:

Signature:  **Name: Kate Gellatly**

Date: 23 MAY 2016 **Title: Analyst I**

Sample Data Summary

GEL Laboratories LLC

Report Date: May 23, 2016

Rad

Certificate of Analysis

Sample Summary

SDG Number:	**GEL396189**	**Client:**	**CPRC001**	**Project:**	**CPRC0I16023**
Lab Sample ID:	**396189007**	**Date Collected:**	**04/27/2016 08:52**	**Matrix:**	**WATER**
		Date Received:	**04/28/2016 09:00**		
Client ID:	**B34YC9**			**Prep Basis:**	**"As Received"**
Batch ID:	**1564956**	**Method:**	**9310_ALPHABETA_GPC**	**SOP Ref:**	**GL-RAD-A-001**
Run Date:	**05/07/2016 14:31**	**Analyst:**	**JXC9**	**Instrument:**	**PIC7B**
Data File:	**AB1564956r.xls**	**Aliquot:**	**150 mL**	**Count Time:**	**110 min**
Prep Batch:	**1564956**	**Prep Method:**	**EPA 900.0/SW846 9310**		
Prep Date:	**05/06/2016 11:21**				

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
12587-46-1	Alpha *ALPHA*	U	1.17	pCi/L	+/-1.70	1.71	2.88	3.00
12587-47-2	Beta *BETA*		41.4	pCi/L	+/-3.31	7.47	1.75	4.00

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
The MDC is a sample specific MDC.

GEL Laboratories LLC

Report Date: May 23, 2016

Rad
Certificate of Analysis
Sample Summary

SDG Number:	**GEL396189**	**Client:**	**CPRC001**	**Project:**	**CPRC0I16023**
Lab Sample ID:	**396189007**	**Date Collected:**	**04/27/2016 08:52**	**Matrix:**	**WATER**
		Date Received:	**04/28/2016 09:00**		
Client ID:	**B34YC9**			**Prep Basis:**	**"As Received"**
Batch ID:	**1563932**	**Method:**	**TC99_EIE_LSC**	**SOP Ref:**	**GL-RAD-A-059**
Run Date:	**05/17/2016 07:13**	**Analyst:**	**MYM1**	**Instrument:**	**LSCSILVER**
Data File:	**E1563932.xls**	**Aliquot:**	**100 mL**	**Count Time:**	**15 min**
Prep Batch:	**1563932**	**Prep Method:**	**DOE EML HASL-300, Tc-02-**		
Prep Date:	**05/13/2016 11:39**				

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14133-76-7	Technetium-99		39.2	pCi/L	+/-20.3	20.8	32.1	50.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits
Technetium-99m Tracer	45600	47200	CPM	96.7	(30%-105%)

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

The MDC is a sample specific MDC.

GEL Laboratories LLC

Report Date: May 23, 2016

Rad
Certificate of Analysis
Sample Summary

SDG Number:	**GEL396189**	**Client:**	**CPRC001**	**Project:**	**CPRC0I16023**
Lab Sample ID:	**396189007**	**Date Collected:**	**04/27/2016 08:52**	**Matrix:**	**WATER**
		Date Received:	**04/28/2016 09:00**		
Client ID:	**B34YC9**			**Prep Basis:**	**"As Received"**
Batch ID:	**1565259**	**Method:**	**C14_LSC**	**SOP Ref:**	**GL-RAD-A-003**
Run Date:	**05/13/2016 04:50**	**Analyst:**	**TXJ1**	**Instrument:**	**LSCYELLOW**
Data File:	**C1565259.xls**	**Aliquot:**	**60.01 mL**	**Count Time:**	**60 min**
Prep Batch:	**1565259**	**Prep Method:**	**EPA EERF C-01 Modified**		
Prep Date:	**05/11/2016 16:59**				

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
14762-75-5	Carbon-14		206	pCi/L	+/-16.7	41.7	20.2	50.0

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
The MDC is a sample specific MDC.

GEL Laboratories LLC

Report Date: May 23, 2016

Rad
Certificate of Analysis
Sample Summary

SDG Number:	**GEL396189**	**Client:**	**CPRC001**	**Project:**	**CPRC0I16023**
Lab Sample ID:	**396189007**	**Date Collected:**	**04/27/2016 08:52**	**Matrix:**	**WATER**
		Date Received:	**04/28/2016 09:00**		
Client ID:	**B34YC9**			**Prep Basis:**	**"As Received"**
Batch ID:	**1565641**	**Method:**	**TRITIUM_DIST_LSC**	**SOP Ref:**	**GL-RAD-A-002**
Run Date:	**05/14/2016 00:12**	**Analyst:**	**TXJ1**	**Instrument:**	**LSCGOLD**
Data File:	**T1565641R.xls**	**Aliquot:**	**50 mL**	**Count Time:**	**50 min**
Prep Batch:	**1565641**	**Prep Method:**	**EPA 906.0 Modified**		
Prep Date:	**05/12/2016 12:17**				

CAS No.	Parmname	Qual	Result	Units	Uncert	TPU	MDC	RDL
10028-17-8	Tritium		1180	pCi/L	+/-247	337	336	400

Surrogate/Tracer recovery	Result	Nominal	Units	Recovery%	Acceptable Limits

Comments:

U Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).
The MDC is a sample specific MDC.

Quality Control Summary

GEL LABORATORIES LLC
2040 Savage Road Charleston SC 29407 - (843) 556-8171 - www.gel.com

QC Summary

Report Date: May 23, 2016
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Client : **CH2MHill Plateau Remediation Company**
MSIN R3-50 CHPRC
PO Box 1600
Richland, Washington 99352
Contact: **Mr. Scot Fitzgerald**

Workorder: **396189**

Parmname	NOM	Sample	Qual	QC	Units	QC Criteria	Range	Analyst	Date Time
Rad Gas Flow									
Batch 1564956									
QC1203542215 MB									
Alpha			U	0.865	pCi/L			JXC9	05/07/1614:32
Uncert:				+/-1.36					
TPU:				+/-1.37					
Beta			U	1.30	pCi/L				
Uncert:				+/-1.63					
TPU:				+/-1.64					
QC1203542216 396596001 DUP									
Alpha		19.9		36.6	pCi/L				05/07/1614:32
Uncert:		+/-5.71		+/-7.46		RPD:	59* (0% - 20%)		
TPU:		+/-8.59		+/-14.5		RER:	1.94 (0-2)		
Beta		1520		1470	pCi/L				
Uncert:		+/-18.7		+/-17.2		RPD:	4 (0% - 20%)		
TPU:		+/-247		+/-244		RER:	0.328 (0-2)		
QC1203542217 396596001 MS									
Alpha	240	19.9		318	pCi/L	REC:	125 (75%-125%)		05/10/1609:30
Uncert:		+/-5.71		+/-39.8					
TPU:		+/-8.59		+/-72.7					
Beta	879	1520		2240	pCi/L	REC:	81 (75%-125%)		
Uncert:		+/-18.7		+/-55.2					
TPU:		+/-247		+/-367					
QC1203542218 396596001 MSD									
Alpha	240	19.9		215	pCi/L	REC:	81 (75%-125%)		05/09/1611:14
Uncert:		+/-5.71		+/-29.3		RPD:	39* (0%-20%)		
TPU:		+/-8.59		+/-48.2		RER:	2.33* (0-2)		
Beta	879	1520		2520	pCi/L	REC:	113 (75%-125%)		
Uncert:		+/-18.7		+/-58.1		RPD:	12 (0%-20%)		
TPU:		+/-247		+/-413		RER:	1 (0-2)		
QC1203542219 LCS									
Alpha	79.9			85.6	pCi/L	REC:	107 (80%-120%)		05/09/1611:14
Uncert:				+/-7.79					
TPU:				+/-16.4					
Beta	293			344	pCi/L	REC:	117 (80%-120%)		
Uncert:				+/-12.1					
TPU:				+/-57.2					
Rad Liquid Scintillation									
Batch 1563932									
QC1203539558 MB									
Technetium-99			U	-3.32	pCi/L			MYM1	05/17/1615:35
Uncert:				+/-6.37					
TPU:				+/-6.37					
**Technetium-99m Tracer	47200			45600	CPM	REC:	97 (30%-105%)		
QC1203539559 395767006 DUP									
Technetium-99	U	12.3	U	24.6	pCi/L				05/17/1607:47
						RPD:	0 N/A		

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Parmname	NOM	Sample	Qual	QC	Units	QC Criteria		Range	Analyst	Date Time
Rad Liquid Scintillation										
Batch 1563932										
	Uncert:	+/-18.1		+/-19.1						
	TPU:	+/-18.2		+/-19.3						
						RER:	0.912	(0-2)		
**Technetium-99m Tracer	47200	47300		46900	CPM	REC:	99	(30%-105%)		
QC1203539560 LCS										
Technetium-99	430			358	pCi/L	REC:	83	(80%-120%)		05/17/1608:03
	Uncert:			+/-20.8						
	TPU:			+/-44.9						
**Technetium-99m Tracer	47200			47700	CPM	REC:	101	(30%-105%)		
Batch 1565259										
QC1203543070 MB										
Carbon-14			U	-2.28	pCi/L				TXJ1	05/12/1621:19
	Uncert:			+/-1.86						
	TPU:			+/-1.86						
QC1203543071 395767006 DUP										
Carbon-14		651		838	pCi/L					05/12/1623:20
	Uncert:	+/-24.1		+/-21.3		RPD:	25*	(0% - 20%)		
	TPU:	+/-123		+/-157		RER:	1.83	(0-2)		
QC1203543072 395767006 MS										
Carbon-14	1260	651		2060	pCi/L	REC:	111	(75%-125%)		05/13/1613:10
	Uncert:	+/-24.1		+/-45.3						
	TPU:	+/-123		+/-385						
QC1203543073 LCS										
Carbon-14	252			253	pCi/L	REC:	100	(80%-120%)		05/13/1613:55
	Uncert:			+/-6.36						
	TPU:			+/-47.4						
Batch 1565641										
QC1203544163 MB										
Tritium			U	-5.14	pCi/L				TXJ1	05/16/1614:02
	Uncert:			+/-45.9						
	TPU:			+/-45.9						
QC1203544164 395767006 DUP										
Tritium		657		688	pCi/L					05/13/1606:34
	Uncert:	+/-218		+/-219		RPD:	4	(0% - 100%)		
	TPU:	+/-253		+/-257		RER:	0.164	(0-2)		
QC1203544165 395767006 MS										
Tritium	2350	657		2710	pCi/L	REC:	88	(75%-125%)		05/14/1602:15
	Uncert:	+/-218		+/-301						
	TPU:	+/-253		+/-605						
QC1203544166 LCS										
Tritium	2340			1890	pCi/L	REC:	81	(80%-120%)		05/13/1608:19
	Uncert:			+/-272						
	TPU:			+/-456						

Notes:

TPU and Counting Uncertainty are calculated at the 95% confidence level (1.96-sigma).

The Qualifiers in this report are defined as follows:

* Duplicate analysis not within control limits

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+	Correlation coefficient for Method of Standard Additions (MSA) is < 0.995
<	Sample is below the EPA guidance level for Reactive Releasable Cyanide and/or Reactive Releasable Sulfide
>	Result greater than quantifiable range or greater than upper limit of the analysis range
A	The TIC is a suspected aldol-condensation product
B	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).
B	The analyte was detected in both the associated QC blank and in the sample.
B	The associated QC sample blank has a result >= 2X the MDA and, after corrections, result is >= MDA for this sample
C	Analyte has been confirmed by GC/MS analysis
C	Target analyte was detected in the sample and the associated blank. The associated blank concentration is >= EQL or is > 5% of the measured concentration and/or decision level for associated samples.
D	Results are reported from a diluted aliquot of sample.
E	Concentration exceeds the calibration range of the instrument
E	Reported value is estimated due to interferences. See comment in narrative.
J	The analyte was detected at a value less than the contract required detection limit (RDL), but greater than or equal to the IDL/MDL (as appropriate).Value is estimated
M	Duplicate precision not met.
N	Spike Sample recovery is outside control limits.
P	Aroclor target analyte with greater than 25% difference between column analyses.
S	Reported value determined by the Method of Standard Additions (MSA)
T	Spike and/or spike duplicate sample recovery is outside control limits.
U	Analyzed for but not detected above limiting criteria. Includes MDL, MDA, PQL, zero, counting error, and total analytical error.
UX	Gamma Spectroscopy--Uncertain identification
W	Post-digestion spike recovery for GFAA out of control limit. Sample absorbency < 50% of spike absorbency.
X	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
Y	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
Z	Consult Case Narrative, Data Summary package, or Project Manager concerning this qualifier
o	Analyte failed to recover within LCS limits (0rganics only)

N/A indicates that spike recovery limits do not apply when sample concentration exceeds spike conc. by a factor of 4 or more or %RPD not applicable.
** Indicates analyte is a surrogate compound.
^ The Relative Percent Difference (RPD) obtained from the sample duplicate (DUP) is evaluated against the acceptence criteria when the sample is greater than five times (5X) the contract required detection limit (RL). In cases where either the sample or duplicate value is less than 5X the RL, a control limit of +/- the RL is used to evaluate the DUP result.
For PS, PSD, and SDILT results, the values listed are the measured amounts, not final concentrations.

Where the analytical method has been performed under NELAP certification, the analysis has met all of the requirements of the NELAC standard unless qualified on the QC Summary.